DL205 Series

Features

Micromodule Type

- Five kinds of CPU are available.
- Module addition: Up to 8 slot
- Maximum I/O points: 8,192 points
- Program memory: 2 K to 15.8 K/
  Data memory: 2.4 K to 30.4 K
- Communication port: 2 ports
  (1 port only for the D2-230)
- PID control: Up to 16 build-in loops (D2-260/265)

Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
Programmer
DirectSOFT
Terminator I/O
Process Control
ZIP LINK

Features

Standard feature

For the DL205, five kinds of CPU that have a wide range of power supplies and functions at minimized cost are available. For example, the D2-260 has a total memory of 30.4K (program memory is 15.8K) installed and can support input/output for up to 16,384 points. Moreover, the D2-260 has two built-in communication ports and can be connected to devices such as HMI, serial networks, remote I/O, and ASCII communications. With 260 kinds of instructions, it demonstrates a performance equal to a large, strong control system.
The base come sin four sizes, and supports 12/24 V DC and 100/200 V AC as the power source.
Moreover, therefore more than 60 models of strong input/output modules and communication modules.

Local input/output for all locations

If the I/O is installed near the user side device, wiring cost can be reduced. Up to four units can be connected in a range of up to 30 m (overall length) from the local side base unit.

Evolving medium-sized PLC

The DL 205 series has an enhanced lineup of CPUs with the addition of the D2-265 that has improved functions.
Since the expansion of the I/O base is possible, it has better performance specs than a medium-sized PLC.

Abundant lineup of I/O

Since numerous I/O modules are available, the DL 205 series can be used for various applications.
With enhanced communications and networking capabilities, it can be used for various networks from Ethernet to remote I/O.

Five kinds of CPU in accordance with the scale of system

The DL205 series offers five kinds of CPU. You can select the best CPU according to the scale of system.

Free customization

The DL205 series is used by attaching modules to the dedicated bases. 2-slot, 3-slot, 5-slot, and 8-slot dedicated bases are available. You can freely select a dedicated base according to the scale of system.

Expandability

The DL205 series can expand I/O up to 1,536 points (when the DL265 CPU is used). Moreover, modules for analog control and communication (Ethernet/DeviceNet) with the host equipment are available, thus providing enhanced expansion of your system.

PID control

Each CPU of the DL250-1, DL260 and DL265 has 4- and 16-channel PID loop functions. you can easily perform PID control by opening the PID control menu and setting the designated register using DirectSoft.

Easy maintenance

The DL205 series adopts a stackable configuration that facilitates module connection and disconnection. If a failure occurs in a module, you can easily restore the system by simply replacing the relevant module.

Large memory capacity

Among the DL205 series, the D2-265 CPU is equipped with a large-capacity memory of 50.9 kw.

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Dimensions
CPU Specifications
Special Module
Input/Output Module
Analog Module
Base Unit
Precautions when Switching from an SZ
SZ/DL205 Model Number Correlation Table

DL205 Series
Specifications

Model Number List

Name	Outline						
CPU Module	CPU Module						
	Model Number	Function				Weight (g)	Price
	D2-230	Memory 2.4 K Maximum input/output 256 points				80	Open
	D2-240	Memory 3.8 K Maximum input/output 896 points				80	Open
	D2-250-1	Memory 14.8 K Maximum input/output 2,048 points				70	Open
	D2-260	Memory 30.4 K Maximum input/output 8,192 points				70	Open
	D2-265	Memory 50.9 K Maximum input/output 8,192 points				70	Open
Self-powered CPU Module	Self-powered CPU Module						
	Model Number	Power Source		Number of Slots (Including CPU Slot)		Weight (g)	Price
	D2-03B-1	100/200 V AC		3		350	Open
	D2-03BDC1-1	12/24 V DC		3		322	Open
	D2-04B-1	100/200 V AC		4		381	Open
	D2-04BDC1-1	12/24 V DC		4		354	Open
	D2-06B-1	100/200 V AC		6		410	Open
	D2-06BDC1-1	12/24 V DC		6		392	Open
	D2-06BDC2-1	125 V DC		6		401	Open
	D2-09B-1	100/200 V AC		9		530	Open
	D2-09BDC1-1	12/24 V DC		9		522	Open
	D2-09BDC2-1	125 V DC		9		531	Open
Base Expansion Module	Base Expansion Module						
	Model Number	Function				Weight (g)	Price
	D2-EM	Base expansion module (Attached to basic base / expansion base)				65	Open
	D2-CM	Expansion base controller (Inserted into the CPU slot on the expansion base side)				50	Open
Extension IO module	Input/Output Module						
	Model Number	Input		Output		Weight (g)	Price
		Points	Function	Points	Function		
	D2-08ND3	8	12 to 24 V DC Sink/source			65	Open
	D2-16ND3-1	16	24 V DC Sink/source			60	Open
	D2-16ND3-2	16	24 V DC Sink/source			70	Open
	D2-32ND3	32	24 V DC Sink/source			60	Open
	D2-32ND3-2	32	5 to 15 V DC Sink/source			109	Open
	D2-64ND3	64	24 V DC Sink/source			85	Open
	D2-08NA-1	8	100 V AC			70	Open
	D2-08NA-2	8	200 V AC			70	Open
	D2-16NA	16	100 V AC			80	Open
	D2-04TD1			4	12 to 24 V DC Sink	80	Open
	D2-08TD1			8	12 to 24 V DC Sink	65	Open
	D2-08TD2			8	12 to 24 V DC Source	118	Open
	D2-16TD1-1			16	12 to 24 V DC Sink	65	Open
	D2-16TD1-2			16	12 to 24 V DC Sink	60	Open
	D2-16TD2-2			16	12 to 24 V DC Source	80	Open
	D2-32TD1			32	12 to 24 V DC Sink	60	Open
	D2-32TD2			32	12 to 24 V DC Source	100	Open
	D2-64TD1			64	12 to 24 V DC Sink	85	Open
	D2-08TA			8	18 to 220 V AC	80	Open
	F2-08TA			8	24 to 110 V AC	86	Open
	D2-12TA			12	18 to 100 V AC	110	Open
	D2-04TRS			4	Relay 4 A	80	Open
	D2-08TR			8	Relay 1 A	110	Open
	F2-08TRS			8	Relay 7 A	156	Open
	F2-08TR			8	Relay 10 A	156	Open
	D2-12TR			12	Relay 1.5 A	130	Open
	D2-08CDR	4	24 V DC Sink/source	4	Relay 1 A	100	Open
	F2-08SIM	8	Simulator			75	Open

Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
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Terminator I/O
Process Control
ZIP LINK

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DL205 Series

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Name	Outline						
Extension IO module	Analog Input/Output Module						
	Model Number	Input		Output		Weight (g)	Price
		Points	Function	Points	Function		
	F2-04AD-1	4	4 to 20 mA			86	Open
	F2-04AD-2	4	0 to 5 V DC/0 to 10 V DC/ ±5 V/±10 V			86	Open
	F2-08AD-1	8	4 to 20 mA			86	Open
	F2-08AD-2	8	0 to 5 V DC/0 to 10 V DC/ ±5 V/±10 V			118	Open
	F2-02DA-1			2	4 to 20 mA	80	Open
	F2-02DA-1L			2	4 to 20 mA	80	Open
	F2-02DAS-1			2	4 to 20 mA	109	Open
	F2-02DA-2			2	0 to 5 V DC/0 to 10 V DC	80	Open
	F2-02DA-2L			2	0 to 5 V DC/0 to 10 V DC/ ±5 V/±10 V	80	Open
	F2-02DAS-2			2	0 to 5 V DC/0 to 10 V DC/ ±5 V/±10 V	109	Open
	F2-08DA-1			8	4 to 20 mA	80	Open
	F2-08DA-2			8	0 to 5 V DC/0 to 10 V DC	109	Open
	F2-4AD2DA	4	4 to 20 mA	2	4 to 20 mA	118	Open
	F2-8AD4DA-1	8	4 to 20 mA (Unusable for D2-230, 240)	4	4 to 20 mA (Unusable for D2-230, 240)	62	Open
	F2-8AD4DA-2	8	0 to 5 V DC/0 to 10 V DC (Unusable for D2-230, 240)	4	0 to 5 V DC/0 to 10 V DC (Unusable for D2-230, 240)	61	Open
	F2-04RTD	4	Resistance thermometer bulb			86	Open
	F2-04THM	4	Thermocouple			86	Open
	Special Module						
	Model Number	Function				Weight (g)	Price
	H2-ERM100	Ethernet remote I/O master station (10/100BASE-T/TX)				45	Open
	H2-EBC100	Ethernet base controller (10/100BASE-T/TX) (Inserted into the CPU slot)				43	Open
	D2-HSIO	CUnet communication				65	Open
	H2-ECOM100	Ethernet communication (10/100BASE-T/TX)				43	Open
	D2-DCM	Serial communication (2 ports)				109	Open
	F2-DEVNETS-1	DeviceNet slave (Inserted into the CPU slot)				86	Open
	DS1-16NTD2	Board type DeviceNet slave 24 V DC 16 points input 21.6 to 26.4 V DC 16 points output				80	Open
	D2-MLINK	MECHATROLINK-II Motion control module				50	Open
	D2-02PM	2-axis positioning module				85	Open
	H2-CTRIO	High speed counter input/output				65	Open
	H2-CTRIO2	High speed counter input/output					Open
	D2-CTRINT	High speed counter interface				65	Open

DL205 Series
Specifications

Name	Outline			
Associated Equipment	Accessories			
	Model Number	Function	Weight (g)	Price
	D2-FILL	Dummy panel	6	Open
	Peripheral Device			
	Model Number	Function	Weight (g)	Price
	PC-DSOFT5	Programmer software for computer	657	Open
	D4-HPP-1	Instruction word programmer	380	Open
	D2-HPP	Instruction word programmer (Equipped with Z-20JP)	220	Open
	DV-1000	Operation display panel	160	Open
	FA-ISOCON	RS232 → RS422/RS485 converter	670	Open
	Cable / Connector for program			
	Model Number	Function	Weight (g)	Price
	S-9CNS1	Conversion connector between DOS/V and Z-20JP		Open
	S-15HCNP1	Convert connector between Z-20JP and PLC general-purpose communication port (High-density D-sub15 pin)		Open
	Z-20JP	Programmer connection cable 2 m, modular jack on both ends	220	Open
	Maintenance Product			
	Model Number	Function	Weight (g)	Price
	D2-BAT	CPU memory backup battery for D2-230/D2-240	10	Open
	D2-BAT-1	CPU memory backup battery for D2-250-1/D2-260	6.8	Open
	D2-EE-1	EEPROM for D2-230: 8 K byte (2 units)	106	Open
	D2-EE-2	EEPROM for D2-240: 32 K byte (2 units)	107	Open
	D2-FUSE-1 (Z-3FK)	Fuse kit for replacement: 3.15 A 5 units for D2-12TA	1	Open
	D2-FUSE-4 (Z-4FK)	Fuse kit for replacement: 4 A 5 units for D2-12TR	1	Open
	D2-FUSE-3 (Z-6FK)	Fuse kit for replacement: 6.3 A 5 units for D2-04TRS, D2-08TR and D2-08CDR	1	Open

DL205 Series

Specifications

CPU Specification

System Capacity	D2-230	D2-240	D2-250-1	D2-260	D2-265
Usable Total Memory Capacity (Word)	2.4 K	3.8 K	14.8 K	30.4 K	50.9 K
Ladder Memory Capacity (Word) and Memory Type	2,048 EEPROM	2,560 EEPROM	7,680 Flash	15,872 Flash	24,064 MRAM*1
V Memory Capacity (Word)	256	1,024	7,168	14,592	26,880 (Power failure holding possible area: 14,592, Non-power failure holding area: 12,288)
Backup	○	○	○	○	○
Maximum Input/Output Points (I,Q,M,GI,GQ)	256	896 (320 I + 320 Q + 256 M)	2,048 (512 I + 512 Q + 1,024 M)	8,192 (1,024 I + 1,024 Q + 2,048 M + 2,048 GI + 2,048 GQ)	8,192
Input/Output Points that can be Mounted Via the CPU Base	256	256	256	256	512
Maximum Number Via the Local Expansion Base	Unexpandable	Unexpandable	2	4	4
Input/Output Points that can be Mounted Via the CPU and Expansion Bases	Not possible.	Not possible.	768 (Expansion base for up to two units)	1,280 (Expansion base for up to four units)	1536 (Expansion base for up to four units)
Serial Remote I/O (Points)	Not applicable	Up to 896 (Including CPU input/output)	Up to 2,048 (Including CPU and expansion input/output)	Up to 8,192 (Including CPU and expansion input/output)	Up to 8,192 (Including CPU and expansion input/output)
Remote I/O Channels	Not applicable	2	8 (7 + 1 CPU port)	8 (7 + 1 CPU port)	8 (7 + 1 CPU port)
Input/Output Points per Remote channel	Not applicable	2,048 (Limited to 896)	2,048	2,048	2,048
Ethernet Remote I/O	Not applicable	○	○	○	○
Discrete Input/Output Points	Not applicable	Up to 896 (Including CPU input/output)	Up to 2,048 (Including CPU and expansion input/output)	Up to 8,192 (Including CPU and expansion input/output)	Up to 8,192 (Including CPU and expansion input/output)
Analog Input/Output Channels	Not applicable	Allocate to the V memory	Allocate to the V memory	Allocate to the V memory	Allocate to the V memory
Remote I/O Channels	Not applicable	Restriction by power consumption	Restriction by power consumption	Restriction by power consumption	Restriction by power consumption
Input/Output Points per Remote Channel	Not applicable	16,384 (Limited to 896)	16,384 (When using I, Q, M, GI,GQ and data registers any area.)	16,384 (When using I, Q, M, GI,GQ and data registers any area.)	16,384 (When using I, Q, M, GI,GQ and data registers any area.)
Maximum Slave Number per Channel	Not applicable	16	16	16	16
Performance					
Processing Speed Sequence Instruction (LD Instruction)	3.3 µs	1.4 µs	0.61 µs	0.61 µs	0.1µs
Processing Speed Data Processing Instruction (ADD Instruction)	198 µs	291 µs	78.4 µs	78.4 µs	0.5µs
Standard Scan Time (During 1K Boolean Operation)	4 to 6 ms	10 to 12 ms	1.9 ms	1.9 ms	0.5ms
Programming and Diagnosis Function					
Ladder Type	○	○	○	○	○
Stage Type	○/256	○/256	○/1,024	○/1,024	○/1,024
Rewrite During RUN	○	○	○	○	○
Variable / Fixed Scan	Variable	Variable	Variable	Variable	Variable
Number of Instructions	111	130	196	358	365
Internal Relay	256	256	1,024	2,048	2,048
Timer	64	128	256	256	256
Counter	64	128	128	256	256
Direct Input/Output	○	○	○	○	○
Subroutines	x	○	○	○	○
For/Next Loop	x	○	○	○	○
Timed Interrupt	x	○	○	○	○
Integer Math	○	○	○	○	○*2
Floating-point Math	x	x	○	○	○
Trigonometric Functions	x	x	x	○	○
Table Instructions	x	x	x	○	○
PID Control	x	x	○, 4 loops	○, 16 loops	○, 16 loops
Drum Sequencer	x	x	○	○	○
Bit of Word	x	x	○	○	○
ASCII Output	x	x	○	○, Input/output	○, Input/output
Real-time Clock / Calendar	x	○	○	○	○
Internal Diagnostics	○	○	○	○	○
Password	○	○, Multi-level	○, Multi-level	○, Multi-level	○, Multi-level
System/User Error Log	x	x	○	○	○

DL205 Series
Specifications/Dimensions

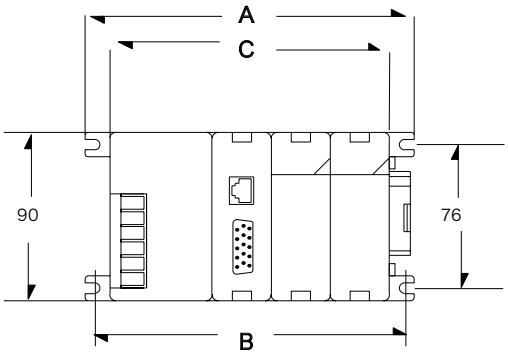
Communication					
Built-in Ports	Port 1: RS-232C	Port 1: RS-232C Port 2: RS-232C	Port 1: RS-232C Port 2: RS (232C/422)	Port 1: RS-232C Port 2: RS (232C/422/485)	Port 1: RS232C Port 2: RS232C/422/485 Port 3: Ethernet/FL-NET
K-sequence	○	○	○	○	○
DirectNet(CCM2)	x	○	○	○	○
MODBUS RTU Master / Save	x	x	○	○	○
ASCII communications	x	x	Transmission	Transmit and receive	Transmit and receive
Maximum Communication Speed	9,600 bps	19.2 kbps	38.4 kbps	38.4 kbps	115.2 kbps/: 100BASE-TX
Weight (g)	80	80	70	70	70

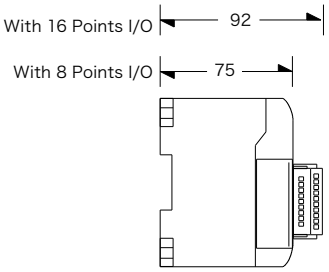
*1 When an MRAM is mounted. The battery-less (maintenance free) calendar / clock functions are backed up by a high-capacity capacitor. When the power source OFF state continues for a long time, the calendar / clock information is deleted. The calendar / clock data is stored for approx. two weeks (when it is stored at a room temperature of 25˚C).

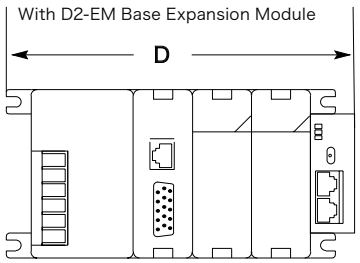
*2 Integer, floating point, trigonometric function (The floating-point arithmetic is sped up by a microcomputer that has a built-in FPU.)

Dimensions (Unit: mm)

Base Unit	A	B	C	D
D2-03B-1, D2-03BDC1-1	172	163	148	184
D2-04B-1, D2-04BDC1-1	203	194	179	215
D2-06B-1, D2-06BDC1-1, D2-06BDC2-1	265	256	241	277
D2-09B-1, D2-09BDC1-1, D2-09BDC2-1	358	349	334	370







Common Subject Matter
KOSTAC Safety AZ-C1
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DL205 Series

CPU Specifications

CPU Module

D2-265

Performance Specifications

Items	Specifications
Program Memory Capacity (Word)	50.9 K
Ladder Memory Capacity (Word)	24,064 MRAM*1
Data Register Capacity (Word)	26,880 (Power failure holding possible area: 14,592, Non-power failure holding area: 12,288)
Backup	○
Maximum Input/Output Points (I,Q,M,GI,GQ)	8,192
Input/Output Points that can be Mounted Via the CPU Base	512
Maximum Number Via the Local Expansion Base	4
Input/Output Points that can be Mounted Via the CPU and Expansion Bases	1536 (Expansion base for up to four units)
Serial Remote I/O (Points)	Up to 8,192 (Including CPU and expansion input/output)
Remote I/O Channels	8 (7 + 1 CPU port)
Input/Output Points per Remote channel	2,048
Ethernet Remote I/O	○
Discrete input/output points	Up to 8,192 (Including CPU and expansion input/output)
Analog Input/Output Channels	Allocate to the data register.
Remote I/O Channels	Restriction by power consumption
Input/Output Points per Remote channel	16,384 (When using I, Q, M, GI,GQ and data registers any area.)
Maximum Slave Number per Channel	16
Processing Speed Sequence Instruction (LD Instruction)	0.1 μs
Processing Speed Data Processing Instruction (ADD Instruction)	0.5 μs
Standard Scan Time (During 1K Boolean Operation)	0.5 ms
Ladder Type	○
Stage Type	○ 1,024
Rewrite During RUN	○
Variable / Fixed Scan	Variable
Number of Instructions and Functional Memory	365
Internal Relay	2,048
Timer	256
Counter	256
Direct Input/Output	○
Subroutines	○
For/Next Loop	○
Timed Interrupt	○
Integer Math	○*2
Floating-point Math	○
Trigonometric Functions	○
Table Instructions	○
PID Control	○, 16 loops
Drum Sequencer	○
Bit of Word	○
ASCII Output	○, Input/Output
Real-time Clock / Calendar	○
Internal Diagnostics	○
Password	○, Multi-level
System/User Error Log	○
Communication Function: Port 1	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 9,600 bps (Fixed) Connection: 6-pin modular (Female) jack Protocol: K sequence (S), MODBUS/RTU (S)
Communication Function: Port 2	Transmission method: RS-232C, RS-422, RS-485 compatible (Non-isolated) Transmission speed: 300, 600, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400, 14,400, 28,800, 57600, 115200 Connection: High-density D-sub 15-pin connector (Female) Protocol: DirectNET(M/S), MODBUS/RTU (M/S), Non-procedure (M/S), PRINT/ASCII input, K sequence (S)
Communication Function: Port 3 (Ethernet / FInet Port)	Transmission method: Ethernet, FL-net (Can be switched by the 4-row DIP SW1 OFF: Ethernet / ON: FL-NET) Transmission speed: 100BASE-TX, 10BASE-T (Automatic negotiation) Connection: RJ45 format modular connector Ethernet mode: - K sequence (S) -Direct NET (M/S) -MODBUS TCP/IP (M/S)

Outline

To enable a miniature PLC to be used more dynamically and comfortably, the D2-265 adds an Ethernet communication port, expandable memory capacity, and faster processing to the basic major functions of conventional DL205 series PLCs.

CPU Realizes Ethernet Communications

Ethernet communications conventionally require dedicated modules (H2-ECOM100). Since the D2-265 is equipped with an Ethernet communication port, it can realize Ethernet communications (ECOM protocol, MODBUS/TCP, FL-net (OPCN-2), etc.) without using a dedicated module. Thus, the D2-265 can be connected to programming tools and various types of Ethernet communication equipment, and communicate an enormous amount of information at higher speed. Moreover, it reduces the system cost.

Strengthened Collaboration with FL-net (OPCN-2)*3 Communications

With the use of FL-net, which is an industrial open network, you can grasp production information among communication devices of different manufacturers in real-time. The D2-265 supports both common memory functions that share data with other FL-net-supporting devices and message transmission functions that deliver only necessary data when it is necessary, making the creation of a more flexible and open control system possible.

Memory Capacity Expansion

If there is a shortage of program capacity or register capacity in a conventional D2 series PLC, a large-size PLC of a large capacity is required. However, the D2-265 increases the program capacity by 8K words and the register capacity by 12K words, realizing space-savings and cost reductions in your control panel configuration.

No Battery Means Maintenance-free.

Conventional PLCs are equipped with a battery to save memory. However, the D2-265 requires no battery because it is mounted with a non-volatile memory (MRAM*4) that enables high-speed writing. Therefore, it requires no maintenance such as battery replacement.

Increased Processing Speed to Enhance Productivity

With increasing need for high speed data transmission and large capacity memory processing, the processing speed of PLCs may cause a bottleneck in the entire control system. Therefore, if the processing speed of PLCs is increased and the tact time of the entire system is shortened, productivity improves and manufacturing loads can be reduced.

*1 When an MRAM is mounted. The battery-less (maintenance free) calendar / clock functions are backed up by a high-capacity capacitor. When the power source OFF state continues for a long time, the calendar / clock information is deleted. The calendar / clock data is stored for approx. two weeks (when it is stored at a room temperature of 25℃).

*2 Integer, floating point, trigonometric function (The floating-point arithmetic is sped up by a microcomputer that has a built-in FPU.)

*3 A standard for industrial open network that interconnects programmable controllers, numerical control robots, and computers, which was born in the factory automation field. It is established as a Japanese Industrial Standard (JIS B 3521) and Japan Electrical Manufacturers' Association Standards (JEM 1480, JEM-TR 213, and JEM-TR 214).

*4 Magnetoresistive Random Access Memory

DL205 Series
CPU Specifications

CPU Module

D2-260

Performance Specifications

Items	Specifications
Program Memory Capacity (Word)	30.4 K
Ladder Memory Capacity (Word) and Memory Type	15,872 Flash
Data Register Capacity (Word)	14,592
Backup	○
Maximum Input/Output Points (I,Q,M,GI,GQ)	8,192
Input/Output Points that can be Mounted Via the CPU Base	256
Maximum Number Via the Local Expansion Base	4
Input/Output Points that can be Mounted Via the CPU and Expansion Bases	1,280 (Expansion base for up to four units)
Serial Remote I/O (Points)	Up to 8,192 (Including CPU and expansion input/output)
Remote I/O Channels	8 (7 + 1 CPU port)
Input/Output Points per Remote channel	2,048
Ethernet Remote I/O	○
Analog Input/Output Channels	Allocate to the data register.
Remote I/O Channels	Restriction by power consumption
Input/Output Points per Remote channel	16,384 (When using I, Q, M, GI,GQ and data registers any area.)
Maximum Slave Number per Channel	16
Processing Speed Sequence Instruction (LD Instruction)	0.61 μs
Processing SpeedData Processing Instruction (ADD Instruction)	78.4 μs
Standard Scan Time (During 1K Boolean Operation)	1.9 ms
Language System	Simultaneous use of relay symbol type and stage type
Rewrite During RUN	○
Variable / Fixed Scan	Variable
Number of Instructions and Functional Memory	358
Internal Relay	2,048
Timer	256
Counter	256
Direct Input/Output	○
Subroutines	○
For/Next Loop	○
Timed Interrupt	○
Integer Math	○
Floating-point Math	○
Trigonometric Functions	○
Table Instructions	○
PID Control	○, 16 loops
Drum Sequencer	○
Bit of Word	○
ASCII Output	○, Input/Output
Real-time Clock / Calendar	○
Internal Diagnostics	○
Password	○, Multi-level
System/User Error Log	○
Communication Function: Port 1	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 9,600 bps (Fixed) Connection: 6-pin modular (Female) jack Protocol: K sequence (S)
Communication Function: Port 2	Transmission method: RS-232C, RS-422, RS-485 compatible (Non-isolated) Transmission speed: 300, 600, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400 Connection: D-sub 15-pin (Female) Protocol: DirectNET (M/S), MODBUS (M/S), Non-procedure (M/S), PRINT/ASCII input, K sequence (S)

Outline

The D2-260 is equipped not only to deliver the performance other DL205 CPU models have, but also with outstanding functions that a CPU of this size has rarely has.

Base Extension

The D2-260 has an expandable base that allows the connection of up to five base units (one CPU base unit and four expansion base units). The expansion base units are used if the slots built into the CPU base unit are insufficient, if the power supply of the base unit is exceeded, and if a base unit is installed in a remote location from the CPU base unit. (However, expansion is possible only within the length of the expansion cable.) All input/output on the CPU side and the expansion side are updated every time the CPU is scanned. The D2-CM module should be inserted into the CPU slot of each expansion base unit. Moreover, a D2-EM expansion module is required not only for the CPU base unit but also for each expansion base unit. For details on base expansion functions, see the pages on "Expansion module" in this chapter.

CPU has Built-in Strong Communication Functions

The D2-260 is equipped with two communication ports that enable various kinds of communication. The RS-232C port modular connector on the upper side can be used for programming by connecting to a programmable display, and used as a K sequence or DirectNet (CCM2) slave. The 15-pin port (Port 2) on the bottom side supports RS-232C and RS-422/485. Moreover, this port is compatible with the protocols shown below.

- K sequence (Programmer-dedicated)
- DirectNet (CCM2) master / slave
- MODBUS RTU master / save
- ASCII input/output communications

Moreover, Port 2 can be used as a remote I/O master. When the communication ports of the D2-260 are expanded, an Ethernet communication module and a data communication module can be mounted.

16-loop PID

Up to 16 PID loops can be directly processed in the CPU. The control mode can be selected from diverse control modes including automatic, manual, and cascade control. Moreover, various types of alarms such as process variation, rate of change, and deviation are available. Since loop operation parameters (such as process variables, set points, and set point limit pairs) are stored in the V memory, they can be easily accessed from programmable displays and HMIs. Setting can be done from the setting menu and monitoring windows of user-friendly DirectSOFT programming software.

Since the auto-tuning functions are easy to use, you can shorten the time required for setting and maintenance. Basically, using the auto-tuning functions, the CPU automatically decides the best loop control settings.

DL205 Series

CPU Specifications

CPU Module

D2-250-1

Performance Specifications

Items	Specifications
Program Memory Capacity (Word)	14.8 K
Ladder Memory Capacity (Word) and Memory Type	7,680 Flash
Data Register Capacity (Word)	7,168
Backup	○
Maximum Input/Output Points (I,Q,M,GI,GQ)	2,048
Input/Output Points that can be Mounted	256
Maximum Number Via the Local Expansion Base	2 (CPU base) 768 (Expansion base for up to two units)
Serial Remote I/O (Points)	Up to 2,048 (Including CPU and expansion input/output)
Remote I/O Channels	8 (7 + 1 CPU port)
Input/Output Points per Remote channel	2,048
Ethernet Remote I/O	○
Analog Input/Output Channels	Allocate to the data register.
Remote I/O Channels	Restriction by power consumption
Input/Output Points per Remote channel	16,384 (Limited to 896)
Maximum Slave Number per Channel	16
Processing Speed Sequence Instruction (LD Instruction)	0.61 μs
Processing Speed Data Processing Instruction (ADD Instruction)	78.4 μs
Standard Scan Time (During 1K Boolean Operation)	1.9 ms
Language System	Simultaneous use of relay symbol type and stage type
Rewrite During RUN	○
Variable / Fixed Scan	Variable
Number of Instructions and Functional Memory	196
Internal Relay	1,024
Timer	256
Counter	128
Direct Input/Output	○
Subroutines	○
For/Next Loop	○
Timed Interrupt	○
Integer Math	○
Floating-point Math	○
PID Control	○, 4 loops
Drum Sequencer	○
Bit of Word	○
ASCII Output	○
Real-time Clock / Calendar	○
Internal Diagnostics	○
Password	○, Multi-level
System/User Error Log	○
Communication Function: Port 1	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 9,600 bps (Fixed) Connection: 6-pin modular (Female) jack Protocol: K sequence (S)
Communication Function: Port 2	Transmission method: RS-232C, RS-422compatible (Non-isolated) Transmission speed: 300, 600, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400 Connection: D-sub 15-pin (Female) Protocol: DirectNET (M/S), MODBUS (M/S), Non-procedure (M/S), K sequence (S)

Outline

The D2-250-1 CPU is a successor model of the SZ-4M CPU.
The D2-250-1 inherits all functions and performances that are equipped with the SZ-4M, and has additional base expansion functions. The D2-250-1 features various functions as a CPU although it is low-priced.

Base Extension

The D2-260 has an expandable base that allows the connection of up to three base units (one CPU base unit and two expansion base units). The expansion base units are used if the slots built into the CPU base unit are insufficient, if the power supply of the base unit is exceeded, and if a base unit is installed in a remote location from the CPU base unit. (However, expansion is possible only within the length of the expansion cable.) All input/output on the CPU side and the expansion side are updated every time the CPU is scanned. The D2-CM module should be inserted into the CPU slot of each expansion base unit. Moreover, a D2-EM expansion module is required not only for the CPU base unit but also for each expansion base unit.

CPU has Built-in Strong Communication Functions

The D2-260-1 is equipped with two communication ports that enable various kinds of communication. The RS-232C port on the upper side can be used for programming by connecting to a programmable display or DV-1000, and used as an independent DirectNet slave. The 15-pin port (Port 2) on the bottom side supports RS-232C and RS-422. Moreover, this port is compatible with the protocols shown below.

- K sequence (Programmer-dedicated)
- DirectNet (CCM2) master / slave
- MODBUS RTU master / save

Moreover, Port 2 can be used as a remote I/O master. When the communication ports of the D2-250-1 are expanded, an Ethernet communication module and a data communication module can be mounted.

Four Kinds of PID Loops with Automatic Tuning

Up to four PID loops can be directly processed in the CPU. The control mode can be selected from diverse control modes including automatic, manual, and cascade control. Moreover, various types of alarms such as process variation, rate of change, and deviation are available. Since loop operation parameters (such as process variables, set points, and set point limit pairs) are stored in the V memory, they can be easily accessed from programmable displays and HMIs. Setting can be done from the setting menu and monitoring windows of user-friendly DirectSOFT programming software.
Since the auto-tuning functions are easy to use, you can shorten the time required for setting and maintenance. Basically, using the auto-tuning functions, the CPU automatically decides the best loop control settings.

DL205 Series
CPU Specifications

CPU Module
D2-240

Performance Specifications

Items	Specifications
Program Memory Capacity (Word)	3.8 K
Ladder Memory Capacity (Word) and Memory Type	2,560 EEPROM
Data Register Capacity (Word)	1,024
Backup	○
Maximum Input/Output Points (I,Q,M,GI,GQ)	896
Input/Output Points that can be Mounted Via the CPU Base	256
Maximum Number Via the Local Expansion Base	Unexpandable
Input/Output Points that can be Mounted Via the CPU and Expansion Bases	Not possible.
Serial Remote I/O (Points)	Up to 896 (Including CPU input/output)
Remote I/O Channels	2
Input/Output Points per Remote channel	2,048 (Limited to 896)
Ethernet Remote I/O	○
Discrete input/output points	Up to 896 (Including CPU input/output)
Analog Input/Output Channels	Allocate to the data register.
Remote I/O Channels	Restriction by power consumption
Input/Output Points per Remote channel	16,384 (Limited to 896)
Maximum Slave Number per Channel	16
Processing Speed Sequence Instruction (LD Instruction)	1.4 μs
Processing Speed Data Processing Instruction (ADD Instruction)	291 μs
Standard Scan Time (During 1K Boolean Operation)	10 to 12 ms
Language System	Simultaneous use of relay symbol type and stage type
Rewrite During RUN	○
Variable / Fixed Scan	Variable
Number of Instructions and Functional Memory	130
Internal Relay	256
Timer	128
Counter	128
Direct Input/Output	○
Subroutines	○
For/Next Loop	○
Timed Interrupt	○
Integer Math	○
Real-time Clock / Calendar	○
Internal Diagnostics	○
Password	○, Multi-level
Communication Function: Port 1	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 9,600 bps (Fixed) Connection: 6-pin modular (Female) jack Protocol: K sequence (S)
Communication Function: Port 2	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 300, 600, 1,200, 2,400, 4,800, 9,600, 19,200 bps Connection: 6-pin modular (Female) jack Protocol: DirectNET (S), Non-procedure (M/S), K sequence (S)

Outline
The D2-240 has the good elements of the functional groups equipped in the D2-250-1. Featuring a standard CPU and several communication ports, the D2240 is the most suitable CPU for the applications of users who do not require complicated calculations and PID.

Built-in Memory
The D2-240 has a built-in 2.5K EEPROM (program memory). Therefore, it has no need of memory expansion. When storing valuable data in the V memory backed up by a capacitor, you can store these parameters for a long time by purchasing an optional lithium battery (D2-BAT).

Formidable Instructions
Since the D2-240 has instructions that cover almost all of the processing capacity of the higher end D2-250-1. It can be used for a wide range of applications. Usable instruction groups include contact point logic operation, data manipulation, integer arithmetic, interruption, subroutine, and FOR/NEXT loop.

Equipped with Two RS-232C Communication Ports
The D2-240 is equipped with two communication ports. The port on the upper side can be directly connected to computers for programming as well as Koyo Electronics' instruction word programmers, programmable displays and the DV-1000. The port on the bottom side is dedicated to the slave and supports Koyo Electronics' DirectNet or K sequence protocol, and enables communications at the maximum speed of 19.2 kbps. If you use programmable displays or plan to connect systems to a network in the future, you can select the D2-240. Moreover, the D2-240 supports the D2-DCM data communication module and the H2-ECOM100 Ethernet communication module.

DL205 Spare EEPROM
You may need to prepare spare EEPROM chips. For example, there are cases that you need to upgrade the user side machine with the latest strengthened product. In such a case, you can purchase spare EEPROMs. (Two EEPROM units are contained in one pack.) You can program this EEPROM by mounting it to the CPU (only D2-230/D2-240) and directly programing it from the D2-HPP instruction word programmer.

Spare EEPROM	D2-EE-1	D2-EE-2
CPU	D2-230	D2-240
CPU Program Storage Capacity	2.0 K	2.4 K
Writing Cycle Life	10,000	10,000
Write Inhibit	CPU jumper	CPU jumper
Memory Erasure Method	Electric	Electric

DL205 Series

CPU Specifications

CPU Module

D2-230

Performance Specifications

Items	Specifications
Program Memory Capacity (Word)	2.4 K
Ladder Memory Capacity (Word) and Memory Type	2,048 EEPROM
Data Register Capacity (Word)	256
Backup	○
Maximum Input/Output Points (I,Q,M,GI,GQ)	256
Input/Output Points that can be Mounted Via the CPU Base	256
Maximum Number Via the Local Expansion Base	Unexpandable
Input/Output Points that can be Mounted Via the CPU and Expansion Bases	Not possible.
Processing Speed Sequence Instruction (LD Instruction)	3.3 μs
Processing Speed Data Processing Instruction (ADD Instruction)	198 μs
Standard Scan Time (During 1K Boolean Operation)	4 to 6 ms
Language System	Simultaneous use of relay symbol type and stage type
Rewrite During RUN	○
Variable / Fixed Scan	Variable
Number of Instructions and Functional Memory	111
Internal Relay	256
Timer	64
Counter	64
Direct Input/Output	○
Integer Math	○
Internal Diagnostics	○
Password	○
Communication Function: Port 1	Transmission method: RS-232C compatible (Non-isolated) Transmission speed: 9,600 bps (Fixed) Connection: 6-pin modular (Female) jack Protocol: K sequence (S)

Outline

The D2-230 is the most inexpensive CPU in the DL205 product family. If you are considering purchasing a CPU module from the DL205 family from the aspect of CPU size or because you do not require high CPU power, you are recommended to use the D2-230 first.

Built-in Memory

The D2-230 has a built-in 2.0K EEPROM (program memory). Therefore, it has no need of memory expansion. When storing valuable data in the V memory backed up by a capacitor, you can store these parameters for a long time by purchasing an optional lithium battery (D2-BAT).

Equipped with One Communication Port

The D2-230 is equipped with only one communication port. If you are considering connecting your system to a network in the future, the D2-240, D2-250-1 or D2-260 CPU is required. In particular, you are recommended to add ports for starting and troubleshooting the machine. Moreover, the D2-230 does not support an Ethernet communication module or a data communication module.

Basic Instruction Words

Only some of the standard instructions equipped with the D2-240 are mounted on the D2-230. The instructions of the D2-230 cover basic contact logic arithmetic and simple integer arithmetic.

DL205 Spare EEPROM

You may need to prepare spare EEPROM chips. For example, there are cases that you need to upgrade the user side machine with the latest strengthened product. In such a case, you can purchase spare EEPROMs. (Two EEPROM units are contained in one pack.) You can program this EEPROM by mounting it to the CPU (only D2-230/D2-240) and directly programing it from the D2-HPP instruction word programmer.

Spare EEPROM	D2-EE-1	D2-EE-2
CPU	D2-230	D2-240
CPU Program Storage Capacity	2.0 K	2.4 K
Writing Cycle Life	10,000	10,000
Write Inhibit	CPU jumper	CPU jumper
Memory Erasure Method	Electric	Electric

DL205 Series
Special Module

Base Expansion Module
D2-EM

Expansion Base Controller Module
D2-CM

D2-EM Base Expansion Module Specifications

Items	Specifications
Module Type	Base expansion module
Input/Output Slot to Use	No. Attached to the right side of the (-1) base unit.
Occupied I/O Point	No
Expansion Connector	8-pin RJ45 x 2
Cable	Category 5 straight cable equipped with RJ45 connector
Maximum Cable Length	30 m, expansion system in total
Weight	65 g

D2-CM Expansion Base Controller Module Specifications

Items	Specifications
Module Type	Expansion base controller module
Number of Modules Per Base Unit	1, Can be mounted only to the CPU slot of the (1) base unit.
CPU Occupied Point	No
Expansion Base No. Selecting Switch	Selection by the rotary switch (1 to 4), random order
Weight	50 g

Input/Output Points Supported by the CPU

CPU	Number of Expansion Base Units	Total Input/ Output Points*	Maximum Input Points	Maximum Output Points
D2-265	4	1,536	1,024	1,024
D2-260	4	1,280	1,024	1,024
D2-250-1	2	768	512	512
D2-240	The base expansion system is not supported.			
D2-230				

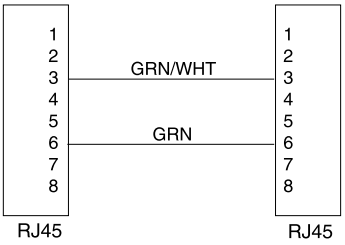
* Total of CPU base units and expansion base units

Base expansion module
The D2-260 supports expanded base configurations up to five base units (one CPU base unit and four expansion base units). Moreover, the D2-250-1 supports expanded base configurations that up to three base units (one CPU base unit and two expansion base units). Generally, expansion base units are used when slots of the CPU base unit are insufficient, when the supply capability of the base unit is exceeded, and when the input/output base unit is installed in a remote location from the CPU base unit (though it should be within the length of the expansion cable.). All input/output points mounted on the CPU and the expansion bases are updated every time the CPU is scanned.
The addressing of the expansion base unit input/output is handled in numerical order according to the setting of the rotary switch on the D2-CM. The CPU recognizes the expansion base unit when the STOP mode is changed to the RUN mode.

Base Unit
The base expansion system requires an input/output base unit type whose model number ends in (-1). Moreover, the D2-CM module must be inserted into the CPU slot of each expansion base unit. Moreover, regarding the CPU base unit and each expansion base unit, the D2-EM unit must be mounted to the right side of the base unit whose model number ends in (-1).

Base Expansion Cable
Expansion modules are connected using category 5straight cables. You need to purchase commercial LAN cables to which a RJ45 connector is attached. The total cable length of the expansion system is a maximum 30 m.

Cabling between D2-EM/D2-EM
(Category 5 straight cables can be used.)



D2-EM Base Expansion Module
The D2-EM expansion unit should be attached to the right side of each base unit in the expansion system. Moreover, the D2-EMs on both ends of the expansion system need to have the termination switch turned on. Moreover, the intermediate expansion unit sandwiched by the units on both ends need to have the termination switch turned off. The CPU base unit can be placed at any position of the base unit in the expansion system.

D2-CM Expansion Base Controller Module
The D2-CM module is inserted into the CPU slot of each expansion base unit. The expansion base unit No. is set by the rotary switch. The address of the expansion base unit input/output (I and Q) is handled in the numerical order set by this rotary switch and is recognized when the STOP mode is changed to the RUN mode in the CPU. However, the address is not recognized by the CPU id the extension base unit No. is duplicated.

DL205 Series

Special Module

Ethernet Remote I/O Master Module

H2-ERM100

The photo shows the H2-ECOM100.
(The shape is the same.)

Specifications

Items	Specifications
Communication	10/100 Base-T/TX
Data Transfer Rate	10/100 Mbps
Link Distance	100 m
Ethernet Port	RJ45
Ethernet Protocol	UDP/IP, IPX
Weight	45 g

Outline

The Ethernet remote master connects the CPU system of the D2-240, D2-250-1, D2-260 and D2-265 to the slave input/output via a high speed Ethernet link.

Needs for Increasing Input/Output

Up to 16 EBC systems can be added to one ERM module. The EBC systems can be also used in combination.

Note: In the case of applications that require large capacity T1H-EBC100 analog input/output or H4-EBC100 16-channel analog input/output, the buffer capacity of a single H2-ERM100 module can be exceeded. In such a case, the H2-ERM100 should be added to the system.

Easy Connection

The ERM is connected to the user's control network through a category 5 UTP cable (cable length is up to 100 m). If you want to extend the connection length or increase the number of nodes, you can use a repeater or a HUB. The PLC, ERM and EBC slave modules are linked together to update the remote I/O point. The scan cycles of these three models are simultaneously generated but are asynchronously performed. Therefore, it is recommended to contain the important input/output points that need to be monitored for each scan, in the CPU base unit.

Network Connections Between ERM and Other Ethernet Devices

It is strongly recommended that the ERM module and the slave be arranged on a dedicated Ethernet remote I/O network. The Ethernet network can process an extremely enormous amount of data transactions. Generally, the processing is performed at very high speed. However, when Ethernet traffic is heavy, processing may have adverse effect on the reliability of the slave input/output and the speed of the input/output network. Therefore, the ERM network and several ERM networks should be separated from the ECOM / business network.

Software Configuration

ERM Workbench is a software utility that configures the ERM module and the remote Ethernet slave. ERM Workbench can configure the ERM input/output network in two ways.

- When the PLC is used as the CPU interface, the configuration procedure is largely simplified if the ERM Workbench PLC wizard is used.
- ERM Workbench can access all parameters concerning the ERM input/output network.

DL205 Series
Special Module

Ethernet Based Controller Module
H2-EBC100

Specifications

Items	Specifications
Communication (Ethernet)	10/100 Base-T/TX
Data Transfer Rate	10/100 Mbps
Link Distance	100 m
Ethernet Port/Protocol	RJ45, TCP/IP, IPX, MODBUS TCP, DHCP, HTML setting
Serial Port/Protocol	RJ12, K sequence, ASCII input/output
Weight	43 g

Outline
The Ethernet base controller modules can create a low-cost, high-performance Ethernet link between the computer-used control system or the ERM remote I/O system and the DL205 I/O. The modules support industry-standard 10/100 Base-T/TX Ethernet communications. Moreover, the modules enable highly flexible computer communications because they support IP and IPX protocols. The EBC modules support the following.

- MODBUS TCP client / server protocol support
- DHCP client support
- When compared with the I/O provided by other companies, the DL205 I/O system can be introduced at low cost.
- Number of the input/output points is almost unlimited.
- Conclusive I/O update that is executed in the dedicated network
- High speed I/O update (Not more than 1 ms per base unit)
- Equipped with a serial port to which an operator panel and the ASCII input/output can be connected (The serial port is not supported when it is equipped with the ERM module.)

User-friendly, Reliable High Speed Communications
The H2-EBC100 module can be inserted into the CPU slot of any DL205 base unit, and supports the DL205 discrete module and the analog module.

Solutions with Related Products
The EBC can be easily connected if Visual Scope, the HMI software made by Koyo Electronics, is used, and the module can import I/O information to Excel and VB, and can control the output.

The specifications and prices described in this catalog were valid when the catalog was issued.
For the latest information, contact our sales persons or see our website.

DL205 Series

Special Module

CUnet Module

D2-HSIO

Features

- Protocol built into the communication chip (MKY40)
- Support 64 stations, 4,096 points per network
- High speed communications (12 Mbps synchronous system): Refreshes 64 stations, 4,096 points I/O in 2,365 ms.
- Network requires no master station.
- Network allows free participation / separation.
- Mail functions allow information transmission of more than 4,096 points (Peer-to-Peer mode).

* *Only the D2-250-1, the D2-260 and the D2-265 CPU can be used.

Number of Connected Units	Shared I/O Point	Communication Speed		
		12 Mbps	6 Mbps	3 Mbps
2	128	102 us	204 us	408 us
4	256	155 us	310 us	620 us
8	512	265 us	530 us	1,060 ms
16	1,024	501 us	1,002 ms	2,004 ms
32	2,048	1,037 ms	2,074 ms	4,148 ms
64	4,096	2,365 ms	4,730 ms	9,460 ms
Maximum Cable Length		100 m	200 m	300 m

Dependent on use environment

High Speed and Easy Inter-PLC Data Linking

When CUnet is used, the data of various devices can be shared just by connecting devices using commercial LAN cables and setting station Nos. Therefore, you can easily obtain data at high speed and largely reduce design man-hours without creating complicated communication programs.

Create Medium and Large-scale Systems at Low Cost

If you connect to CUnet several miniature PLCs that control processes according to their functions, as might be used for motor control or temperature management, you can easily create medium and large-scale, real-time distributed systems. Since the systems can be controlled according to function, they offer better expandability and maintenance of user programming compared with a centralized system.
Moreover, if you use the DL05/DL06/DL205 (SZ series), which are miniature PLCs compatible with CUnet, you can create a system at low cost.

High Speed Monitoring Using Computer

If the computer is equipped with a CUnet-compatible PCI board and PCMCIA card (made by ALGO System), the shared data of devices connected to CUnet can be stored in the computer. Therefore, you can monitor the system in real-time from the computer, as well as collect data at high speed and control connected devices.

Distributed System

- The system is easy to create, expand, and maintain owing to function-based distributed management. Because it is connected to CUnet, the whole system can be controlled.
- Since the data from all processes is shared, the distributed system can perform monitoring and give instructions to the entire system just like a centralized system
- You can create a system at low cost without complicated communication settings.

DL205 Series
Special Module

Communication Module
H2-ECOM100

Specifications

Items	Specifications
Communication (Ethernet)	10/100 Base-T/TX
Data Transfer Rate	10/100 Mbps
Link Distance	100 m
Ethernet Port	RJ45
Ethernet Protocols	TCP/IP, IPX, MODBUS TCP, DHCP, HTML setting
Weight	43 g

Features
- MODBUS TCP client / server protocol
- DHCP client support
- High speed peer-to-peer network connections between PLCs
- High speed update using the DirectSOFT programming software
- Providing high-performance access functions to human machine interfaces (HMI), ERP, MES or Windows-compatible software
- SDK for developing custom drivers (Free of charge)
- Almost unlimited number of network nodes
- Easy setting

Outline
The Ethernet communication module enables high speed peer-to-peer network connections among PLCs at a revolutionarily low cost. It is not necessary to designate a specific PLC as the network master. You can start communications from any PLC to other PLC. Moreover, the Ethernet communication module can link the PLCs and computers using industry-standard cables, hubs, and repeaters. If Koyo Electronics' Visual Scope is used, the Ethernet communication module can easily link Windows spreadsheet programs and PLCs connected to the network. Also, using Visual Scope, the module can link human machine interface (HMI) software and a direct logic PLC. Furthermore, using the DirectSOFT programming software, you can monitor and update programs that operate in any direct logic PLC on the network.

Easy Connection
The ERM is connected to the user's control network through a category 5 UTP cable (cable length is up to 100 m). If you want to extend the connection length or increase the number of nodes, you can use a repeater or a HUB. The PLC, ERM and EBC slave modules are linked together to update the remote I/O point.

Slot Selection
The module can be inserted into any slot of the DL205 CPU base unit (excluding slot 0). This module stores identification data, explanatory information and communications parameters required for communication among PLCs in a flash memory. Before attaching or removing the module, be sure to turn off the power.

Note: The ECOM module can be mounted on the D2-240, D2-250-1, D2-260 and D2-265. The D2-230 does not support the ECOM module.

DL205 Series

Special Module

Serial Data Communication Module

D2-DCM

Specifications

Items	Specifications
Module Type	Intelligent
Number of Modules per CPU	Up to 7 units. The mounting slot is Slot 1 or later.
Supported CPU	D2-240 (Firmware V1.8 or later), D2-250-1 and D2-260
Communication	RS-232C/422 signal level, DirectNet master / slave, K sequence or MODBUS RTU slave protocol. The communication speed can be selected from 300 bps to 38.4 kbps. Odd parity or no parity. DirectNet HEX or ASCII mode, non-procedure.
Recommended Cable	Belden 9729 or equivalent (In the case of RS-422)
Wiring Connector	D-sub 25-pin connector
Weight	109 g

Applications

- Expansion of the communication ports for connecting to computers and programmable displays
- Network interface to DirectNet (CCM2)
- Network interface that is connected to the MODBUS network using the RTU protocol
- Connected to non-procedural serial transmitters and receivers

Expansion of Communication Ports

The communication ports can be easily expanded by mounting a the DCM module. Thus, you can increase the number of connectable devices such as programmable displays and computers. Since the DCM requires no programming, you can start a data transfer by setting DCM communications parameters and connecting the DCM to a device over cable. However, the connected device must have a driver compatible with the DL205.

DirectNet (CCM2) Network Interface

If you want to share data among PLCs or between intelligent type devices such as a host computer or PLC, you can use the DCM as the network interface. The DCM can be easily connected to DirectNet (CCM2). When this network is used, you can upload and download almost all kinds of system data such as timer / counter data, input/output information, direct logic, and V memory information from a compatible PLC. With the use of DCM, the DL205 can function as a network master or a network slave.

MODBUS RTU Interface

Using the DCM as a slave station interface, the DL205 system can be connected to a MODBUS network that uses the MODBUS RTU protocol. However, the host system must be able to issue the MODBUS commands for reading and writing appropriate data. Moreover, the ports at the bottom of the D2-250-1, the D2-260 and the D2-265 CPU can function as the MODBUS master.

Communications Between PLC and PLC

The communications between PLCs is performed by RX (reading from the network) instruction and WX (writing to the network) instruction. So that several instructions are sequenced and one RX or WX instruction is not overwritten, a single SP relay (busy bit) is used. Moreover, communication errors can be notified using other SP relays. Up to 128 bytes can be transferred by one RX or WX instruction.

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SZ/DL205 Model Number Correlation Table

DL205 Series
Special Module

DeviceNet Slave Module
F2-DEVNETS-1

Specifications

Items	Specifications
Module Type	CPU device
DeviceNet Compatibility	Group 2 Master / slave communication
Number of Input/Output	Up to 256 inputs, 256 outputs (Decided by the number of slots per base unit)
Module Mounting Position	CPU slot of any DL205 base unit
Number of Maximum Connected Devices (Per Bus)	64
Node Address / Communication Speed	Can be selected by jumper.
Communication with the Connected Devices	Standard 4-wire system shielded cable is used for connection to the cabinet connector, and 4-wire system molded cable (maximum rate is 500 kbps) is used for connecting to connected devices.
DeviceNet connector	Screw-type terminal block connector (Removable)
Weight	86 g

Functions
The F2-DEVNETS-1 module is a DeviceNet slave unit that can be inserted into the CPU slot of the DL205 base unit. This module maintains the database that stores the parameters for controlling all identification data, diagnostic information, and module operations. Moreover, the F2-DEVNETS-1 module scans all discrete / analog input/output data and notifies the DeviceNet master of the scan results. Since the DL205 base unit with external AC power feed has a built-in 24 V DC, 0.3 A power source, it makes the wiring between the sensor and the actuator and the DL205 input/output module easy and enables these devices to be controlled by the DeviceNet master. Koyo Electronics' DeviceNet I/O subsystem enhances the degrees of freedom of installation and reduces wiring costs. The F2-DEVNETS-1 module supports all models of the DL205 discrete / analog input/output module.

New Features of F2-DEVNETS-1
The F2-DEVNETS-1 module is a successor model of the F2-DEVNETS module with the following strengthened functions.
- Enables node address and communication speed selection by DIP switch
- Screw-type terminal block connector (Removable)
- 1,024 inputs and 1,024 outputs specified by in DeviceNet slave specifications
  (They are limited to the 256 physical inputs and 256 physical outputs by the number of slots per input/output base unit.)

The F2-DEVNETS of the previous version can be replaced with the new F2-DEVNETS-1 by using a jumper to set the selection.

Input/Output Base Unit and Network
The F2-DEVNETS-1 slave module supports all models of discrete / analog input/output modules. By referring to the explanation in this chapter, you can select a DL205 base unit and input/output module.

Supported DL205 Input/Output Module

Discrete Type	Analog Type
Input 4 points	Input 4 channel
Input 8 points	Input 8 channel
Input 16 points	Output 2 channel
Input 32 points	Output 8 channel
Output 4 points	Input 4 channel/Output 2 channel
Output 8 points	Thermocouple 4 channel
Output 16 points (Including 12 output points)	Resistance thermometer bulb 4 channel
Output 32 points	
Input 4 points/Output 4 points	

Main Line Length (m)	Communication Speed	Branch Line Length (m)	Number of Devices
100	500 kbps	6	64
250	250 kbps	6	64
500	125 kbps	6	64

Note: The DeviceNet slave module (F2-DEVNETS-1) is s slave input/output interface product that is authorized by the ODVA and is compatible with DeviceNet. For details, see the website: www.odva.com.

Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
Programmer
DirectSOFT
Terminator I/O
Process Control
ZIP LINK
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DL205 Series

Special Module

MECHATROLINK-Ⅱ Motion Control Module

D2-MLINK

General Specifications

Items	Specifications
Supply Voltage	5 V DC (Supplied from the base)
Supply Voltage Variation Range	According to the specifications of power supply base
Power Consumption	2.5 W or less
Power Source Inrush Current	Not specified. (According to the specifications of power supply base)
Allowable Instantaneous Power Failure Time	According to the specifications of power supply base
Ambient Temperature	Use Ambient Temperature: 0˚C to 55˚C Storage Temperature:-20˚C to 70˚C
Use Ambient Humidity	Use / Storage ambient humidity: 30 to 95% (No condensation)
Surrounding Atmosphere in Place of Use	No corrosive gases
Vibration Resistance	MIL STD 810C, Method 514.2 IEC60068-2-6 JIS C60068-2-6 Comply with the test method of sine wave vibration
Impact Resistance	MIL STD 810C, Method 516.2 IEC60068-2-27 JIS C60068-2-27 compliance
Noise Resistance	FCC Class A compliance EN55011: 1998 Class A, Impulse noise 1 us, 1,000 V RFI: No malfunction by the electric wave of the walkie-talkie of 150, 450 MHz (5 W/15 cm)
Withstand Voltage	500 V AC (50/60 Hz 1 min)
Insulation Resistance	10 MΩ or more (500 V DC)

Communication Specifications

Items	Specifications
Mode	Master station
Connector	USBTYPE-A
Signal Aspect	RS-485
Communication Configuration	Complete synchronous type
Protocol	MECHATROLINK-II protocol compatible
Number of Connected Stations	C2 master: 1 Slave: 15
Transmission Speed	10 Mbps
Data Size	MECHATROLINK-II 32-byte transmission +32-byte reception / station
Transmission Code	Manchester code system
Frame Type	HDLC compliance
Used Cable	1 shielded twisted pair cable (MECHATROLINK-II cable)
Transmission Distance	Maximum total extension: 50 m
Number of Attached Modules	Basic base except slot 0
Transmission Period	1,000 us to 8,000 us
Communication Period	1,000 us to 8,000 us (Equal to transmission period)

Outline

The D2-MLINK is a MECHATROLINK-II*[1] communication-compatible motion control module. The D2-MLINK performs synchronized operation of several FA devices via network MECHATROLINK-II communication, to deliver distributed control of FA devices.

① Cyclically transmits commands in the fixed range of 1 to 8 ms. (Must be set according to the number of slave stations.)
② Communicates at a high speed of 10 Mbps.
③ Controls up to 15 axes simultaneously.
④ Allows wire-saving, low-cost, and highly-functional system configurations.

The D2MLINK that is mounted on the D2-260/265 CPU is a multi-point system based on daisy chain connections with one C1 master (master station that becomes the main controller) and up to 15 slave stations.

*1 "MECHATROLINK-II" is a trademark of the MECHATROLINK Members Association.

Control Specifications

Items			Specifications
Number of Control Axes			Up to 15 axes
Number of Interpolations			Up to 5 banks simultaneously
Coordinate			Orthogonal
Maximum Position Command Value			-2,147,483,647 to +2,147,483,647
Maximum Speed Command			-40,000,000 to 400,000,000
Acceleration Type			Asymmetric trapezoid, sigmoid
Addition-Subtraction Speed Time			1 to 60,000 ms
Stopping Time			1 to 60,000 ms
Programming Language			Ladder
Command Type			Absolute/incremental
Control Function	Axle Lock / Release	Brake ON	Motor brake signal ON
		Brake OFF	Motor brake signal OFF
		Servo ON	Motor excitation ON
		Servo OFF	Motor excitation OFF
	Position Control	PTP positioning	Positioning by the MECHATOROLINK positioning command
		Linear interpolation	Positioning by linear trajectory based on target position and movement
		Circular interpolation	Positioning by circular trajectory based on set circle center and target position
		Sizing feed	Positioning by set distance, limitless axis support
		Multistage positioning (Backup)	Continuous positioning by set pattern
	Origin Function	Origin search	Origin position search by set pattern
		Initialization	Absolute encoder initialization
		Position setting	Current position change
		Origin setting	Absolute encoder reference value setting
	Speed Control, JOG		Operate by command speed
	Interruption Sizing Feed		Switched to sizing feed by external signal in the middle of speed control
	Torque Control		Operate by command torque
	Stop		Stops motor rotation (immediate stop, quick stop, decelerating stop - 3 kinds).
Auxiliary Function	Information Monitor	Automatic	Position / speed / status automatic monitor
		Manual	Position / speed / status readout by command
	Parameter	Check	Servodriver parameter readout
		Change	Servodriver parameter write
	Error Processing	Automatic	System error automatic detection and check
		Check	Error information readout
		Clear	Error condition reset

DL205 Series
Special Module

2-axis Positioning Module
D2-02PM

General Specifications

Items	Specifications
Use Ambient Temperature	0 to 55˚C
Storage Temperature	-20 to 70˚C
Use Ambient Humidity	30% to 95% (No condensation)
Surrounding Atmosphere in Place of Use	No corrosive gases Environmental pollution degree 2 (UL840 compliance)
Installation Site	Installed in the board
Vibration Resistance	IEC60068-2-6 (JIS C60068-2-6) Half amplitude: 3.5 mm 5 to 9 Hz 3 directions Constant acceleration: 9.8 m/s^2 10 to 150 Hz 3 directions Sweep: 1 octave / min±10%
Impact Resistance	IEC60068-2-27 (JIS C60068-2-27) Malfunction impact: Peak acceleration 147 m/s^2 11 ms 3 directions (3 times to each axis)
Noise Resistance	Impulse 1,000 V 1 µs pulse
Unnecessary Radiation	EN61000-6-4
Dielectric Voltage	500 V AC: 1 min (Internal circuit to external terminal)
Insulation Resistance	500 V DC: 1 MΩ or more (Internal circuit to external terminal)

Functional Specifications

Items	Specifications
Control System	Pulse output open loop control
Number of Control Axes	2 axes
Pulse Type	CW/CCW, pulse/code, A phase / B phase
Pulse Output System	Line driver or open collector
Position Command Range	-2,147,483,648 to 2,147,483,647 (32-bit)
Pulse Output Frequency	1 to 400 kHz (line driver), 1 to 100 kHz (open collector), resolution: 1 pulse
Operation Mode	Automatic positioning, manual JOG, inching, origin search, return to origin, interruption sizing, constant speed control, linear interpolation, circular interpolation, and multistage consecutive positioning (Up to 192 stages)
Origin Search Pattern	8 kinds
Acceleration and Deceleration Control	Trapezoid operation, sigmoid acceleration and deceleration operation
Override	0 to 250%
Stop	Decelerating stop, quick stop, positioning completion stop, failure stop
Backlash Compensation	0 to 9,999
Origin Shift	-2,147,483,648 to 2,147,483,647
Dwell Time	0 to 99,990 ms
Command Issue Method	Relay method. Input: 48 points, output: 48 points
Data Transfer Method	By RD instruction, WT instruction
Control Period	1 ms
Other Functions	Soft limit, dwell time (multistage), electronic gear
Attachable Slot	Can be inserted into slots other than 0 slot.
External Connection Method	FCN-365P040-AU (Fujitsu component)

Functional List

Positioning	Automatic positioning	
	Multistage positioning	Method 1 Method 2
	Linear interpolation	
	Circular interpolation	
Speed Control	Available	
Interruption Sizing Control		
JOG Operation		
Inching Operation		
Origin Search	Mode 1 (Close point passage type)	
	Mode 2 (Counter passage type)	
	Mode 3 (Counter return type 1)	
	Mode 4 (Counter return type 2)	
	Mode 5 (Limit return type 1)	
	Mode 6 (Limit return type 2)	
	Mode 7 (Internal relay type)	
	Mode 8 (Test mode)	
Other	Origin shift function	
	Override function	
	Sigmoid acceleration and deceleration	
	Speed limit function	
	Electronic gear function	
	Acceleration and deceleration change function	
	Backlash compensation	
	Software stroke limit function	
	Hardware stroke limit function	
	Simultaneous start function	
	Initial data function	
	Tool setting function	

Outline

The D2-02PM is a biaxial pulse output positioning module for the D2 series (D2-260/265).
The D2-02PM has the features of automatic positioning, manual jogging, inching, origin searching, return to origin, interruption sizing, constant speed control, linear interpolation, circular interpolation, and multistage continuous positioning (up to 192 stages), and supports line driver and open collector output.

Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
Programmer
DirectSOFT
Terminator I/O
Process Control
ZIP LINK

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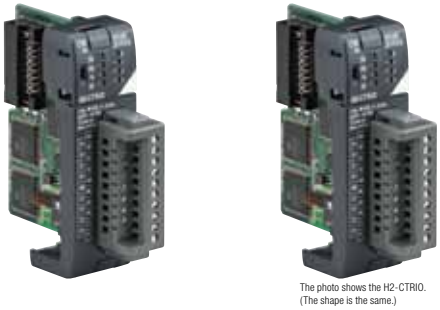
DL205 Series

Special Module

High Speed Counter Input/Output Module

H2-CTRIO **H2-CTRIO2**



The photo shows the H2-CTRIO. (The shape is the same.)

General Specifications

Items	Specifications	
	H2-CTRIO	H2-CTRIO2
Module Type	Intelligent	
Number of Modules Per Base Unit	Only restriction by power consumption	
Occupied I/O Point	No. Input/Output are allocated to PLC V memory.	
Wiring Connector	Removable 19P terminal block	
Isolation	2,500 V (Input/Output → logic), 1,000 V (Input channel to input channel, between all outputs)	1,500 V I/O to Logic 1,000 V among Input Channels and All Outputs
Weight	65 g	

Input Specifications

Items	Specifications	
	H2-CTRIO	H2-CTRIO2
Input	8 points (Sink/source), up to 100 kHz	8 points (Sink/source), up to 250 kHz
Minimum Pulse Width	5 µs	0.5 µs
Input Voltage Range	9 to 30 V DC	
Maximum Voltage	30 V DC	
Input Voltage Protection	Zener diode (Fixed to 33 V DC)	
Rated Input Current	8 mA (Standard), 12 mA (Maximum)	
Minimum ON-state Voltage	9.0 V DC	
Maximum OFF-state Voltage	2.0 V DC	
Minimum ON-state Current	5 mA (9 V DC is required for guaranteeing the ON status.)	
Maximum OFF-state Current	2.0 mA	
OFF→ON Response Time	Below 3 µs	Below 0.5 µs
ON→OFF Response Time	Below 3 µs	Below 0.5 µs

Output Specifications

Items	Specifications	
	H2-CTRIO	H2-CTRIO2
Output	4 points (Independent isolation specification), current source / sink, FET output (Open drain, source, floating-gate drive)	
Voltage Range	5 to 36 V DC	
Maximum Voltage	36 V DC	
Output Clamp Voltage	60 V DC	
Maximum Load Current	1.0 A	1.0 A at 23˚C, 0.5 A at 60˚C
Maximum Load Voltage	36 V DC	
Maximum Leakage Current	100 µA	
Inrush Current	5 A for 20 ms	2 A for 10 ms
OFF→ON Response Time	Below 3 µs	Below 1 µs
ON→OFF Response Time	Below 3 µs	Below 1 µs
ON-time Voltage Drop	Up to 0.3 V	Up to 0.45 V
External Power Supply	Required only by loop power supply. Not required when using the internal module function.*	
Overcurrent Protection	Up to 15 A	
Stop by Temperature	Contact point temperature = 150˚C	
Overheat Prevention Reset	Contact point temperature = 130˚C	
Duty Cycle Range	1% to 99% (In unit of 1%, default = 50%)	
Configurable Preset Value a) Single b) Multiple	a) Assign one preset value to each output. b) Assign one preset value table to each output. Up to 128 preset values can be stored in one table. Maximum table set number = 255	

* When using the stepping motor, prepare an external power supply.

Input Resources

Items	Specifications	
	H2-CTRIO	H2-CTRIO2
Counter/Timer	4 (2 per 4-input channel group)	
Response Option	Phase difference (1 time, 2 multiplication, 4 multiplication measurement), up or down counter, edge timer, dual edge timer, input pulse catch, reset, prohibition	
Timer Range/Resolution	4.2 billion (32-bit), 1 µs	
Counter Range	±2.1 billion (32 bits or 31 bits + sign bit)	

Output Resources

Items	Specifications	
	H2-CTRIO	H2-CTRIO2
Pulse Output/Discrete Output	Pulse outputs: 2 channels (2 outputs per channel; 20 Hz-25 kHz) Discrete outputs: 4 points.	Pulse outputs: 2 channels (2 outputs per channel; 20 Hz-250 kHz) Discrete outputs: 4 points.
Resource Option	Output Profiles: Trapezoid S-Curve Symmetrical S-Curve Dynamic Positioning Dynamic Velocity Home Search Free Form Velocity Mode Run to Limit Mode Run to Position Mode	Output Profiles: Trapezoid S-Curve Symmetrical S-Curve Dynamic Positioning Dynamic Velocity Home Search Free Form Dynamic Positioning Plus Trapezoid Plus Trapezoid w/Limits Velocity Mode Run to Limit Mode Run to Position Mode
	Discrete outputs: 4 configurable for set, reset, pulse on, pulse off, toggle, reset count functions (assigned to respond to Timer/Counter input functions)	
	Raw mode: Direct access to discrete output from user application program	
Target Position Range	±2.1 billion (32 bits or 31 bits + sign bit)	

Outline

The high speed counter input/output (CTRIO) module is designed to receive high speed pulsed input signals for count measurement or timing applications, and transmits high speed pulsed output signals that can be used for stepping motor control, monitoring, alarms, and other discrete control functions. The CTRIO module can be flexibly used for applications that require accurate count measurement or timing based on input events or for applications for high speed control output.

Since the CTRIO module has a built-in microprocessor, it can operate asynchronously with the PLC controller. Namely, the output generated from this module responds to the input signal in real-time. Therefore, the PLC controller can scan input/output without delay time.

The H2-CTRIO module is designed for use with user devices that transmit pulse output such as a rotary encoder.

DL205 Series
Special Module

Counter Interface Module

D2-CTRINT

A cover is available.

General Specifications

Items	Specifications
Module Type	Discrete
Number of Modules per CPU	1 unit (Only for the slot next to the CPU slot)
Occupied I/O Point	Input 8 points, Output 8 points
Wiring Connector	Removable 10P terminal block
Weight	65 g

Input Specifications

Items	Specifications
Input	4 points (Sink/source), up to 5 kHz
Minimum Pulse Width	100 µs
Rated Input Voltage	12 or 24 V DC ±15%
Maximum Voltage	30 V DC
Rated Input Current	10 mA (Standard), 13 mA (Maximum)
Minimum ON-state Voltage	8.0 V DC
Maximum OFF-state Voltage	1.0 V DC
Minimum ON-state Current	8.0 mA
Maximum OFF-state Current	1.0 mA
OFF→ON Response Time	Below 30 µs
ON→OFF Response Time	Below 30 µs

Output Specifications

Items	Specifications
Output	2 points, current sink, up to 5 kHz
Voltage Range	5.0 V DC ±15%
Maximum Voltage	5.5 V DC
Maximum Load Current	30 mA
Minimum Load Voltage	4.5 V DC
Maximum Allowable Inrush Current	Below 0.1 mA (5.5 V DC)
Maximum Allowable Inrush Current	0.5 A (in 10 ms)
OFF→ON Response Time	Below 30 µs
ON→OFF Response Time	Below 30 µs
External Power Supply	5.0 V DC ±10%

Outline

If the D2-CTRINT is mounted on the DL205 CPU, the following functions can be configured. (However, only one D2-CTRINT unit can be mounted on the DL205 base unit.)

- High-speed 5 kHz counter x 2 (Each counter can have up to 24 preset values.) When the preset value is reached, an interruption routine is performed in the CPU. The D2-240, D2-250-1 and D2-260 support 2 channels, while the D2-230 supports 1 channel.
- D2-265 does not support D2-CTRINT.
- Encoder input for CW and CCW position control (D2-240/D2-250-1/D2-260)
- Can be programmed for positioning and speed control (Up to 5 K pulse per second).
  Pulse output + external interruption, and independent acceleration / deceleration profile (D2-240/D2-250-1/D2-260)
- External interruption input for immediate response to task x 4
- The CPU can read up to four inputs that have a pulse width of 0.1 ms each using pulse catch functions.
- Programmable input filter that guarantees the integrity of input signals (Up to four inputs)
- If the functions are combined, the module can deliver maximum performance. Some modes do not use all usable input/output points. Therefore, it is possible to assign other functions to the input/output points that are not used in the main operation mode.
- Although some modes can be simultaneously used, this module cannot be used for closed loop control. (Namely, pulse output and counter input functions cannot be used simultaneously.)

DL205 Series

Input/Output Module

Input Module《DC 8 Points》

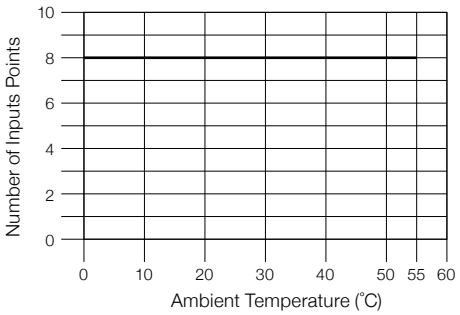
D2-08ND3

A cover is available.

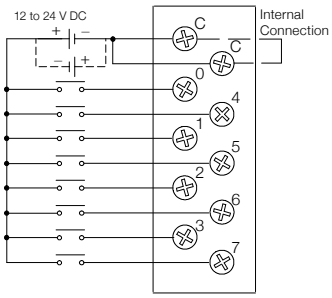
Input Specifications

Items	Specifications
Number of Input Points	8 (Sink/source)
Common	8 points 2 common x 1
Rated Input Voltage	12 to 24 V DC
Input Voltage Range	10.2 to 26.4 V DC
Peak Voltage	26.4 V DC
AC Frequency	Not applicable
ON Voltage Level	Minimum 9.5 V DC
OFF Voltage Level	Up to 3.5 V DC
Input Impedance	2.7 kΩ
Input Current	4.0 mA (12 V DC), 8.5 mA (24 V DC)
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	1 to 8 ms
ON→OFF Response Time	1 to 8 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Weight	65 g

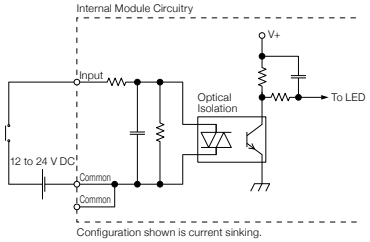
Derating Chart



Wiring Diagram



Equivalent Circuit



DL205 Series
Input/Output Module

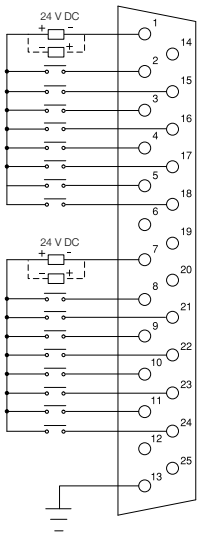
■Input Module《DC 16 Points》

D2-16ND3-1

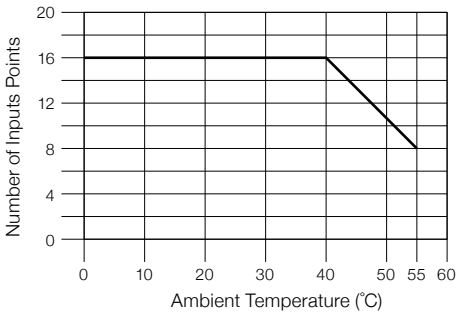
Input Specifications

Items	Specifications
Number of Input Points	16 (Sink/source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Peak Voltage	30 V DC (10 mA)
AC Frequency	Not applicable
ON Voltage Level	Minimum 19 V DC
OFF Voltage Level	Up to 7 V DC
Input Impedance	4.7 kΩ
Input Current	5 mA (24 V DC)
Minimum ON-state Current	4.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	3 to 9 ms
ON→OFF Response Time	3 to 9 ms
Terminal Type	Connector type (D-sub 25-pin)
Status Display	Logic side
Weight	60 g

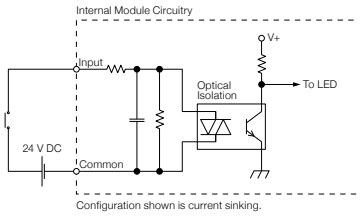
Wiring Diagram



Derating Chart



Equivalent Circuit



The specifications and prices described in this catalog were valid when the catalog was issued.
For the latest information, contact our sales persons or see our website.

DL205 Series

Input/Output Module

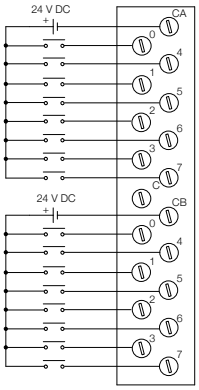
Input Module《DC 16 Points》

D2-16ND3-2

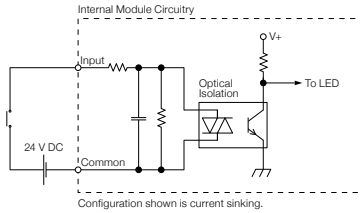
Input Specifications

Items	Specifications
Number of Input Points	16 (Sink/source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Peak Voltage	30 V DC (10 mA)
AC Frequency	Not applicable
ON Voltage Level	Minimum 19 V DC
OFF Voltage Level	Up to 7 V DC
Input Impedance	4.7 kΩ
Input Current	5 mA (24 V DC)
Minimum ON-state Current	4.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	3 to 9 ms
ON→OFF Response Time	3 to 9 ms
Terminal Type	Removable 19P terminal block
Status Display	Logic side
Weight	70 g

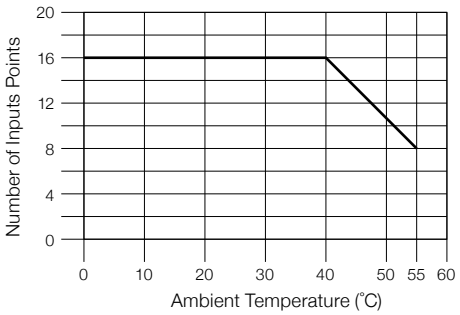
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series
Input/Output Module

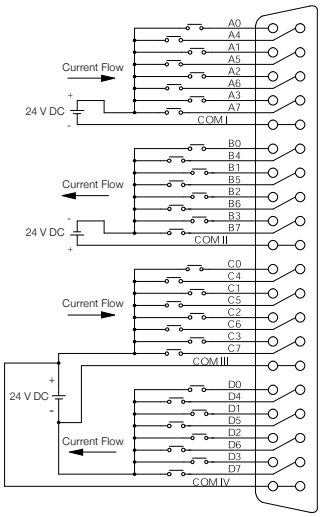
■Input Module《DC 32 Points》

D2-32ND3

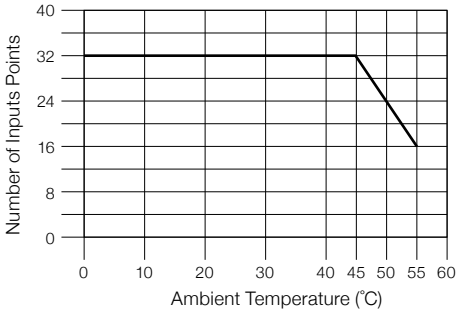
Input Specifications

Items	Specifications
Number of Input Points	32 (Sink/source)
Common	8 points 2 common x 4 (Inter-common independence)
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Peak Voltage	30 V DC
AC Frequency	Not applicable
ON Voltage Level	Minimum 19 V DC
OFF Voltage Level	Up to 7 V DC
Input Impedance	4.8 kΩ
Input Current	5.0 mA (24 V DC)
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	3 to 9 ms
ON→OFF Response Time	3 to 9 ms
Terminal Type	Removable 40-pin connector (Sold separately)
Status Display	Module normal operation LED
Weight	60 g

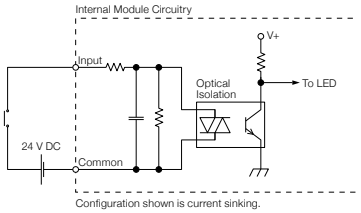
Wiring Diagram



Derating Chart



Equivalent Circuit



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The specifications and prices described in this catalog were valid when the catalog was issued.
For the latest information, contact our sales persons or see our website.

DL205 Series

Input/Output Module

Input Module《DC 32 Points》

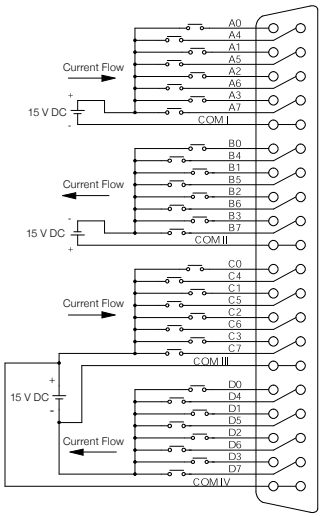
D2-32ND3-2

The photo shows the D2-32ND3.
(The shape is the same.)

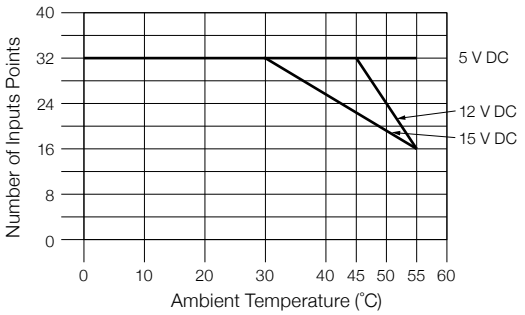
Input Specifications

Items	Specifications
Number of Input Points	32 (Sink/source)
Common	8 points 2 common x 4 (Inter-common independence)
Rated Input Voltage	5 to 15 V DC
Input Voltage Range	4.5 V DC to 15.6 V DC
Peak Voltage	16 V DC
Input Current	4 mA (5 V DC) 11 mA (12 V DC) 14 mA (15 V DC)
Maximum Input Current	16 mA (15.6 V DC)
Input Impedance	1.0 kΩ (5 to 15 V DC)
ON Voltage Level	Minimum 4 V DC
OFF Voltage Level	Up to 2 V DC
Minimum ON-state Current	3 mA
Maximum OFF-state Current	0.5 mA
OFF→ON Response Time	3 to 9 ms
ON→OFF Response Time	3 to 9 ms
Status Display	Module normal operation LED (No input state display)
Terminal Type	Removable 40-pin connector (Sold separately)
Weight	109 g

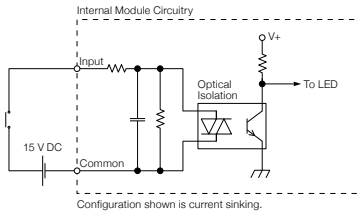
Wiring Diagram



Derating Chart



Equivalent Circuit



DL205 Series
Input/Output Module

■Input Module《DC 64 Points》

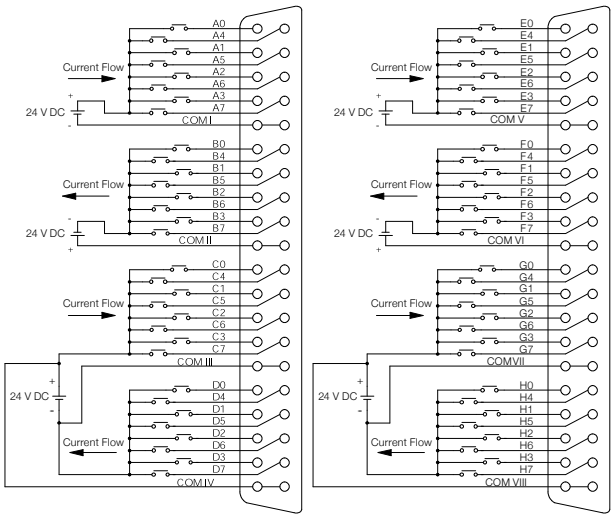
D2-64ND3

Input Specifications

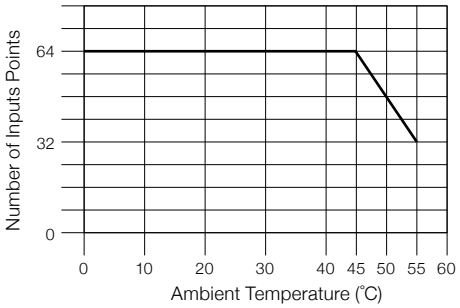
Items	Specifications
Number of Input Points	64 (Sink/source)
Common	8 points 2 common x 8 (Inter-common independence)
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Peak Voltage	30 V DC
AC Frequency	Not applicable
ON Voltage Level	Minimum 19 V DC
OFF Voltage Level	Up to 7 V DC
Input Impedance	8.2 kΩ
Input Current	5.0 mA (24 V DC)
Minimum ON-state Current	3.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	3 to 9 ms
ON→OFF Response Time	3 to 9 ms
Terminal Type	Removable 40-pin connector (Sold separately)
Weight	85 g

Note: This module does not use on Expansion Base.

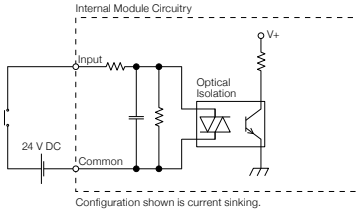
Wiring Diagram



Derating Chart



Equivalent Circuit



DL205 Series

Input/Output Module

Input Simulator《8 Points》

F2-08SIM

Input Specifications

Items	Specifications
Number of Input Points	8
Terminal Type	No
Status Display	Switch side
Weight	75 g

DL205 Series
Input/Output Module

Input Module《AC 8 Points》

D2-08NA-1

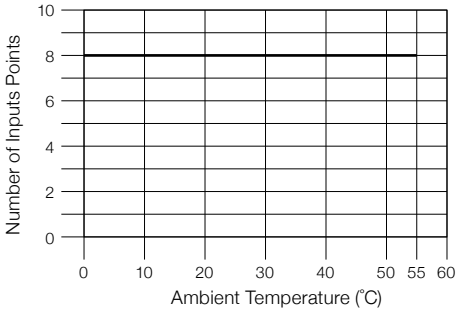
A cover is available.

The photo shows the D2-08ND3.
(The shape is the same.)

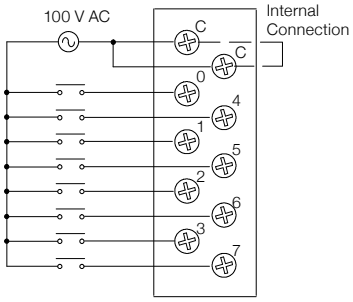
Input Specifications

Items	Specifications
Number of Input Points	8
Common	8 points 2 common
Rated Input Voltage	100 V AC
Input Voltage Range	80 to 132 V AC
Peak Voltage	132 V AC
AC Frequency	47 to 63 Hz
ON Voltage Level	Minimum 75 V AC
OFF Voltage Level	Up to 20 V AC
Input Impedance	15 kΩ (50 Hz) 12 kΩ (60 Hz)
Input Current	11 mA (100 V AC , 50 Hz) 13 mA (100 V AC , 60 Hz)
Minimum ON-state Current	5 mA
Maximum OFF-state Current	2 mA
OFF→ON Response Time	5 to 30 ms
ON→OFF Response Time	10 to 50 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Weight	70 g

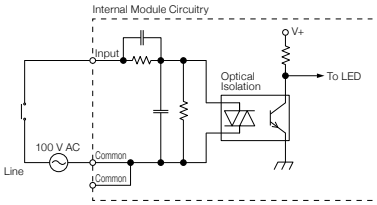
Derating Chart



Wiring Diagram



Equivalent Circuit



DL205 Series

Input/Output Module

■Input Module《AC 8 Points》

D2-08NA-2

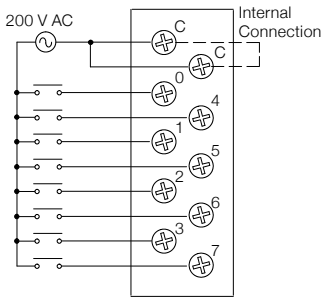
A cover is available.

The photo shows the D2-08ND3.
(The shape is the same.)

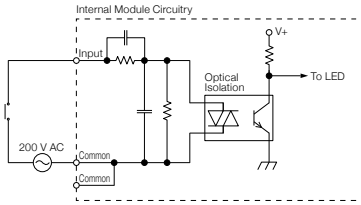
Input Specifications

Items	Specifications
Number of Input Points	8
Common	8 points 2 common
Rated Input Voltage	200 V AC
Input Voltage Range	170 to 265 V AC
Peak Voltage	265 V AC
AC Frequency	47 to 63 Hz
ON Voltage Level	Minimum 150 V AC
OFF Voltage Level	Up to 40 V AC
Input Impedance	18 kΩ (60 Hz)
Input Current	9 mA (220 V AC, 50 Hz) 11 mA (265 V AC, 50 Hz) 10 mA (220 V AC, 60 Hz) 12 mA (265 V AC, 60 Hz)
Minimum ON-state Current	10 mA
Maximum OFF-state Current	2 mA
OFF→ON Response Time	5 to 30 ms
ON→OFF Response Time	10 to 50 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Weight	70 g

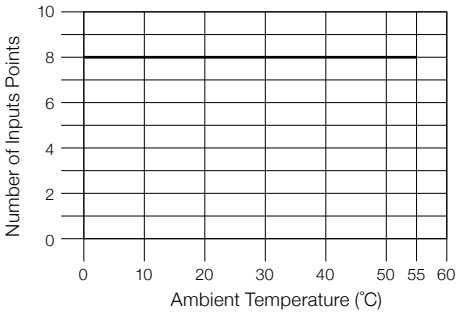
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series
Input/Output Module

Input Module《AC 16 Points》

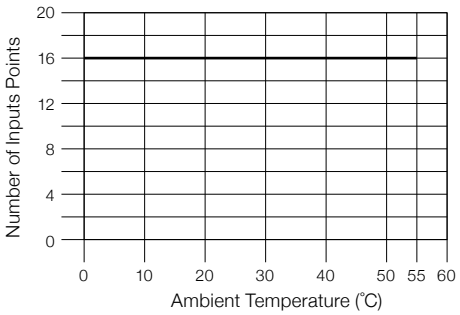
D2-16NA

The photo shows the D2-16ND3-2.
(The shape is the same.)

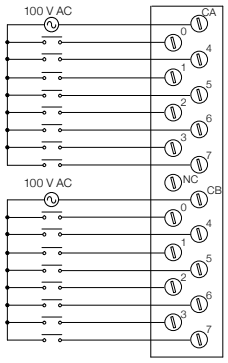
Input Specifications

Items	Specifications
Number of Input Points	16
Common	8 points 1 common x 2 (Inter-common independence)
Rated Input Voltage	100 V AC
Input Voltage Range	80 to 132 V AC
Peak Voltage	132 V AC
AC Frequency	47 to 63 Hz
ON Voltage Level	Minimum 70 V AC
OFF Voltage Level	Up to 20 V AC
Input Impedance	15 kΩ (50 Hz)12 kΩ (60 Hz)
Input Current	11 mA (100 V AC , 50 Hz) 13 mA (100 V AC , 60 Hz) 15 mA (132 V AC, 60 Hz)
Minimum ON-state Current	5 mA
Maximum OFF-state Current	2 mA
OFF→ON Response Time	5 to 30 ms
ON→OFF Response Time	10 to 50 ms
Terminal Type	Removable 19P terminal block
Status Display	Logic side
Weight	80 g

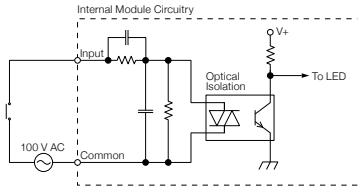
Derating Chart



Wiring Diagram



Equivalent Circuit



DL205 Series

Input/Output Module

Output Module《DC 4 Points》

D2-04TD1

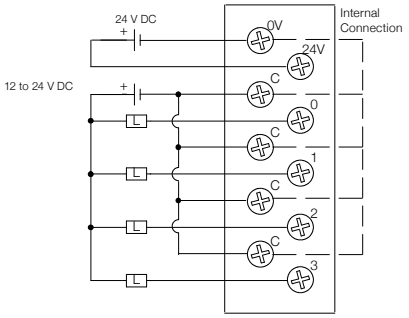
A cover is available.

The photo shows the D2-08ND3.
(The shape is the same.)

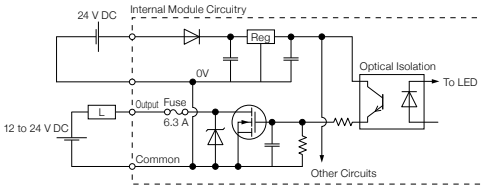
Output Specifications

Items	Specifications
Number of Outputs Points	4 (Sink)
Number of Occupied Outputs	8 points (Only the first 4 points are used.)
Common	4 points 4 common x 1
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.2 to 26.4 V DC
Output Type	NMOS FET (Open drain)
Peak Voltage	40 V DC
ON-time Voltage Drop	Up to 0.72 V DC
Maximum Load Current	4 A/point, 8 A/common
Maximum Leakage Current	0.1 mA (40 V DC)
Maximum Allowable Inrush Current	6 A (in 100 ms) 15 A (in 10 ms)
Minimum Load Current	50 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	4 (1 unit per output point), 6.3 A slow-blow fuse, unexchangeable
Weight	80 g

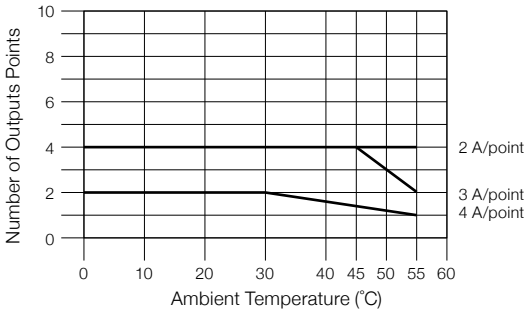
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series
Input/Output Module

Output Module《DC 8 Points》

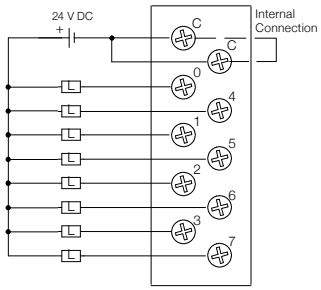
D2-08TD1

A cover is available.

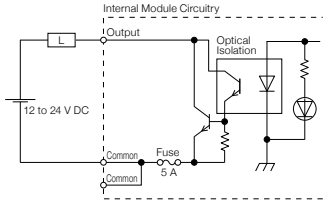
Output Specifications

Items	Specifications
Number of Outputs Points	8 (Sink)
Common	8 points 2 common x 1
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.2 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Peak Voltage	40 V DC
AC Frequency	Not applicable
ON-time Voltage Drop	Up to 1.5 V DC
Maximum Load Current	0.3 A/point, 2.4 A/common
Maximum Leakage Current	0.1 mA (40 V DC)
Maximum Allowable Inrush Current	1 A (in 10 ms)
Minimum Load Current	0.5 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	1 unit per common, 5 A fast-blow fuse, unexchangeable
Weight	65 g

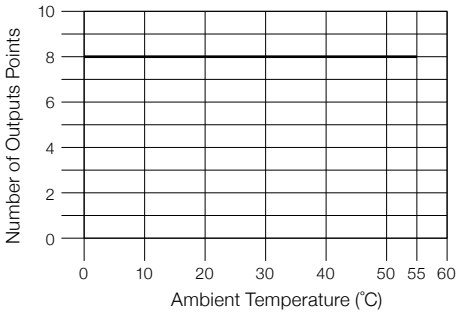
Wiring Diagram



Equivalent Circuit



Derating Chart



Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
Programmer
DirectSOFT
Terminator I/O
Process Control
ZIP LINK

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DL205 Series

Input/Output Module

Output Module《DC 8 Points》

D2-08TD2

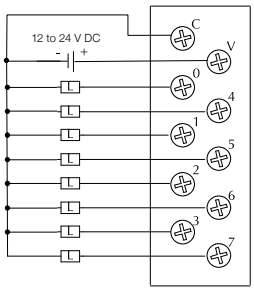
A cover is available.

The photo shows the D2-08TD1
(The shape is the same.)

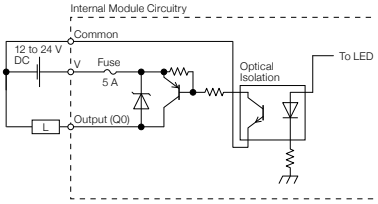
Output Specifications

Items	Specifications
Number of Outputs Points	8 (Source)
Common	8 points 1 common x 1
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.2 to 26.4 V DC
Output Type	PNP transistor (Open collector)
Peak Voltage	40 V DC
Maximum Load Current	0.3 A/point, 2.4 A/common
Maximum Leakage Current	1.0 mA (40 V DC)
ON-time Voltage Drop	Up to 1.5 V DC
Maximum Allowable Inrush Current	1 A (in 10 ms)
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	1 unit per common, 5 A fast-blow fuse, unexchangeable
Weight	118 g

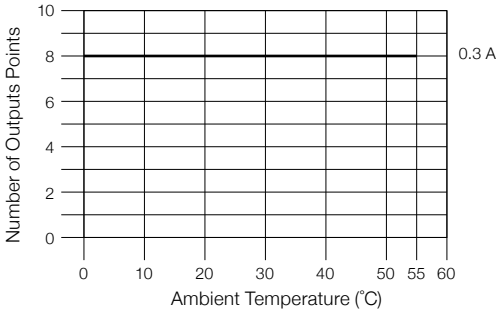
Wiring Diagram



Equivalent Circuit



Derating Chart



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DL205 Series
Input/Output Module

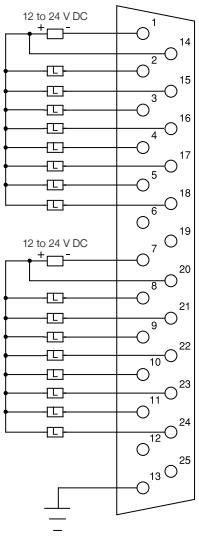
Output Module《DC 16 Points》

D2-16TD1-1

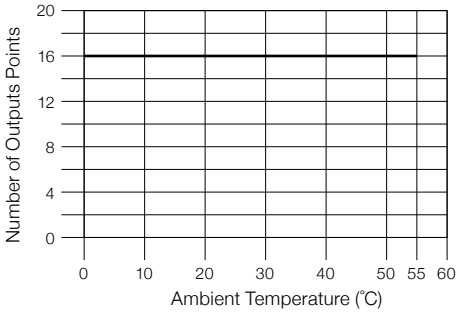
Output Specifications

Items	Specifications
Number of Outputs Points	16 (Sink)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.2 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Peak Voltage	30 V DC
ON-time Voltage Drop	Up to 0.5 V DC
Maximum Load Current	0.1 A/point, 0.8 A/common
Maximum Leakage Current	0.1 mA (30 V DC)
Maximum Allowable Inrush Current	150 mA (in 10 ms)
Minimum Load Current	0.2 mA
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Connector (D-sub 25-pin)
Status Display	Logic side
Fuse	No
Weight	65 g

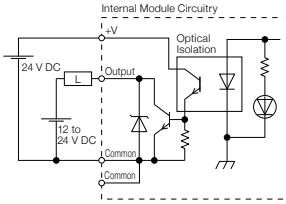
Wiring Diagram



Derating Chart



Equivalent Circuit



DL205 Series

Input/Output Module

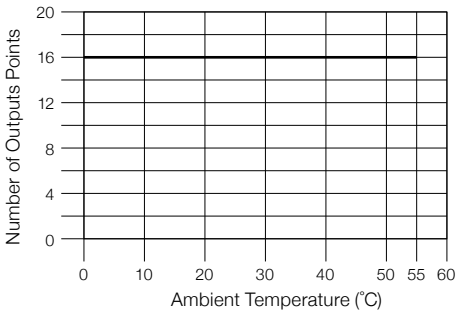
Output Module《DC 16 Points》

D2-16TD1-2

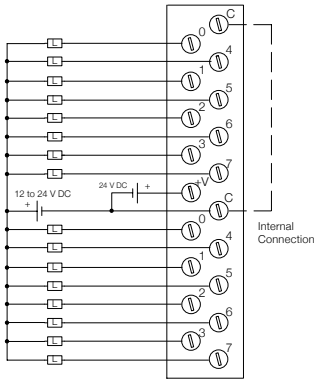
Output Specifications

Items	Specifications
Number of Outputs Points	16 (Current sinking)
Common	16 points 1 common x 2
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.2 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Peak Voltage	30 V DC
AC Frequency	Not applicable
ON-time Voltage Drop	Up to 0.5 V DC
Maximum Load Current	0.1 A/point, 1.6 A/common
Maximum Leakage Current	0.1 mA (30 V DC)
Maximum Allowable Inrush Current	150 mA (in 10 ms)
Minimum Load Current	0.2 mA
Base (5 V DC) Feeding Condition	200 mA
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Removable 19P terminal block
Status Display	Logic side
Fuse	No
External Power Supply	24 V DC±4 V (80 mA at maximum)
Weight	60 g

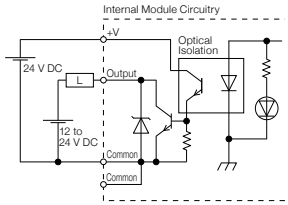
Derating Chart



Wiring Diagram



Equivalent Circuit



DL205 Series
Input/Output Module

■Output Module《DC 16 Points》

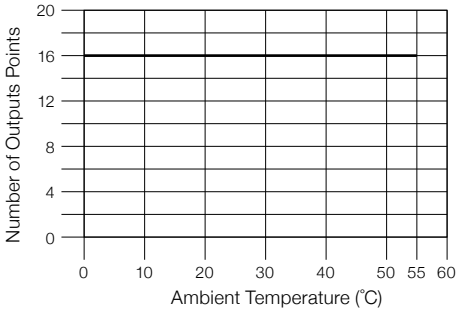
D2-16TD2-2

The photo shows the D2-16TD1-2.
(The shape is the same.)

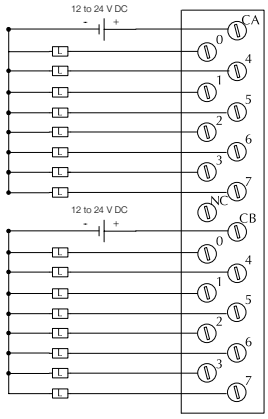
Output Specifications

Items	Specifications
Number of Outputs Points	16 (Current source)
Common	8 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.2 to 26.4 V DC
Output Type	NPN transistor (Emitter follower)
Peak Voltage	30 V DC
AC Frequency	Not applicable
ON-time Voltage Drop	Up to 1.0 V DC
Maximum Load Current	0.1 A/point, 1.6 A/module
Maximum Leakage Current	0.1 mA (30 V DC)
Maximum Allowable Inrush Current	150 mA (in 10 ms)
Minimum Load Current	0.2 mA
Base (5 V DC) Feeding Condition	200 mA
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Removable 19P terminal block
Status Display	Logic side
Fuse	No
Weight	80 g

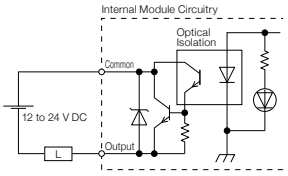
Derating Chart



Wiring Diagram



Equivalent Circuit



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DL205 Series

Input/Output Module

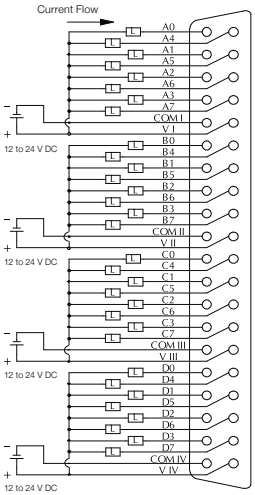
Output Module《DC 32 Points》

D2-32TD1

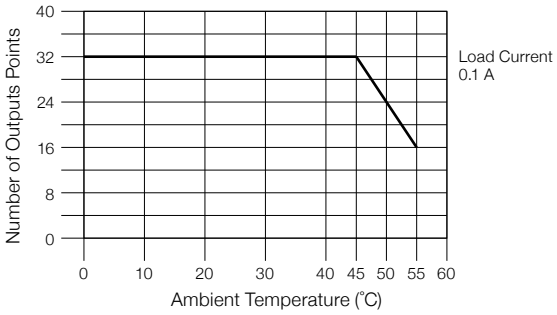
Output Specifications

Items	Specifications
Number of Outputs Points	32 (Sink)
Common	8 points 1 common x 4 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.8 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Peak Voltage	30 V DC
ON-time Voltage Drop	Up to 0.5 V DC
Maximum Load Current	0.1 A/point, up to 3.2 A/module
Maximum Leakage Current	0.1 mA (30 V DC)
Maximum Allowable Inrush Current	150 mA (10 ms)
Minimum Load Current	0.2 mA
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Removable 40-pin connector (Sold separately)
Status Display	Module normal operation LED (No output state display)
Fuse	No
Weight	60 g

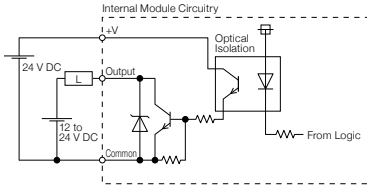
Wiring Diagram



Derating Chart



Equivalent Circuit



DL205 Series
Input/Output Module

■Output Module《DC 32 Points》

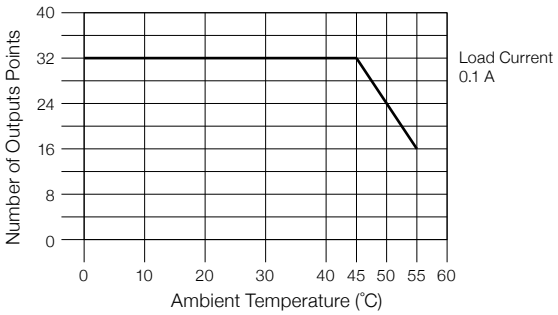
D2-32TD2

The photo shows the D2-32TD1.
(The shape is the same.)

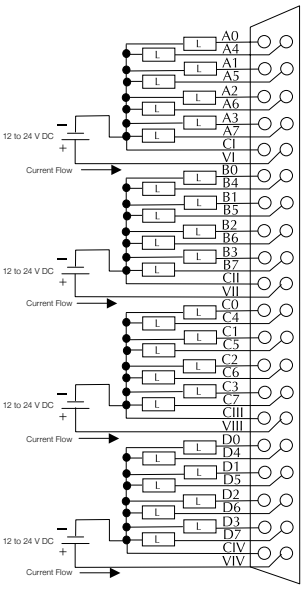
Output Specifications

Items	Specifications
Number of Outputs Points	32 (Source)
Common	8 points 1 common x 4 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.8 to 26.4 V DC
Output Type	PNP transistor (Open collector)
Peak Voltage	30 V DC
Maximum Load Current	0.1 A/point, 0.8 A/common
Minimum Load Current	0.2 mA
Maximum Leakage Current	0.1 mA (30 V DC)
ON-time Voltage Drop	0.5 V DC (0.1 A)
Maximum Allowable Inrush Current	150 mA (10 ms)
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Removable 40-pin connector (Sold separately)
Status Display	Module normal operation LED (No output state display)
Fuse	No
Weight	100 g

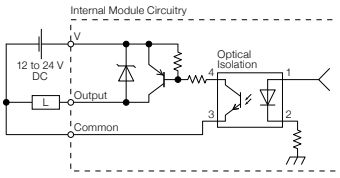
Derating Chart



Wiring Diagram



Equivalent Circuit



DL205 Series

Input/Output Module

Output Module《DC 64 Points》

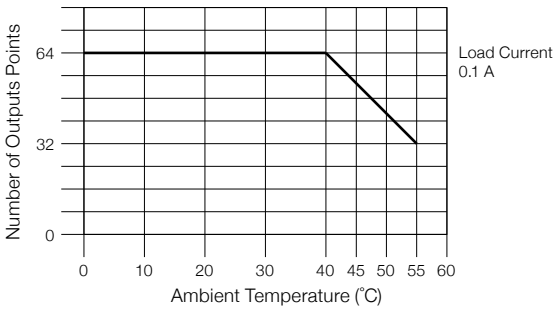
D2-64TD1

Output Specifications

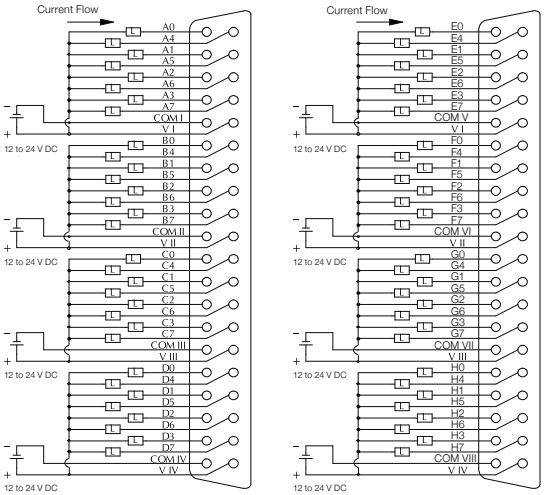
Items	Specifications
Number of Outputs Points	64 (Sink)
Common	8 points 2 common x 8 (Inter-common independence)
Rated Output Voltage	12 to 24 V DC
Output Voltage Range	10.8 to 26.4 V DC
Output Type	NPN transistor (Open collector)
Peak Voltage	30 V DC
ON-time Voltage Drop	Up to 1.0 V DC
Maximum Load Current	0.1 A/point
Maximum Leakage Current	0.1 mA (26.4 V DC)
Maximum Allowable Inrush Current	150 mA (10 ms)
Minimum Load Current	0.2 mA
OFF→ON Response Time	0.5 ms
ON→OFF Response Time	0.5 ms
Terminal Type	Removable 40-pin connector (Sold separately)
Status Display	Module normal operation LED (No output state display)
Fuse	No
Weight	85 g

Note: This module does not use on Expansion Base.

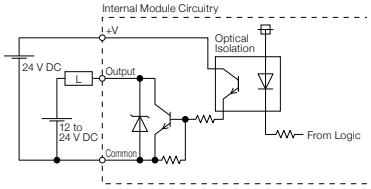
Derating Chart



Wiring Diagram



Equivalent Circuit



DL205 Series
Input/Output Module

■Output Module《AC 8 Points》

D2-08TA

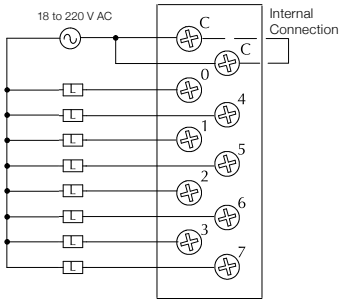
A cover is available.

The photo shows the D2-08TD1.
(The shape is the same.)

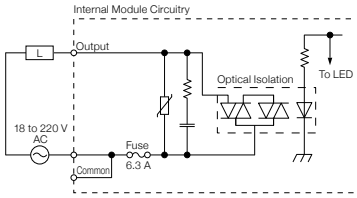
Output Specifications

Items	Specifications
Number of Outputs Points	8
Common	8 points 2 common x 1
Rated Output Voltage	18 to 220 V AC
Output Voltage Range	15 to 264 V AC
Output Type	SSR (Triac)
Peak Voltage	264 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	< 1.5 V AC (> 0.1 A) < AC 3.0 V (< 0.1 A)
Maximum Load Current	0.5 A/point, 4 A/common
Maximum Leakage Current	4 mA (264 V AC, 60 Hz) 1.2 mA (100 V AC , 60 Hz) 0.9 mA (100 V AC , 50 Hz)
Maximum Surge Current	10 A (10 ms)
Minimum Load Current	10 mA (Resistance load)
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms + 1/2 cycle
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	1 unit per common, 6.3 A slow-blow fuse, Replaceable (D2-FUSE-3 (Z-6FK))
Weight	80 g

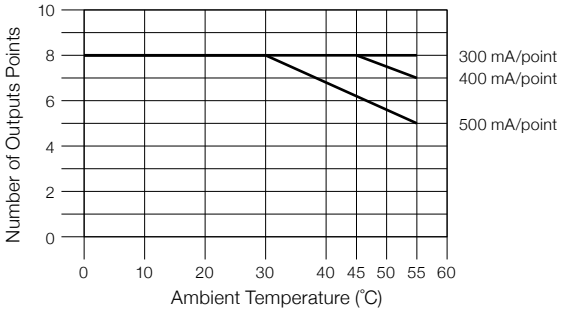
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series

Input/Output Module

■Output Module《AC 8 Points》

F2-08TA

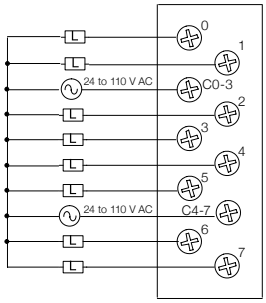
A cover is available.

The photo shows the D2-08TD1.
(The shape is the same.)

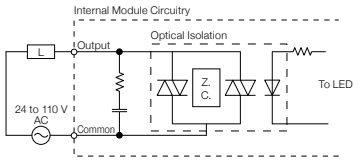
Output Specifications

Items	Specifications
Number of Outputs Points	8
Common	4 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	24 to 110 V AC
Output Voltage Range	20 to 125 V AC
Output Type	SSR (Triac, zero-cross method)
Peak Voltage	140 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	1.6 V (rms), 1.5 A
Maximum Load Current	1.5 A/point (30˚C) 1.0 A/point (60˚C) 4.0 A/common 8.0 A/module (60˚C)
Maximum Leakage Current	0.7 mA (rms)
Peak One Cycle Surge Current	15 A
Minimum Load Current	50 mA
OFF→ON Response Time	0.5 ms to 1/2 cycle
ON→OFF Response Time	0.5 ms to 1/2 cycle
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	No
Weight	86 g

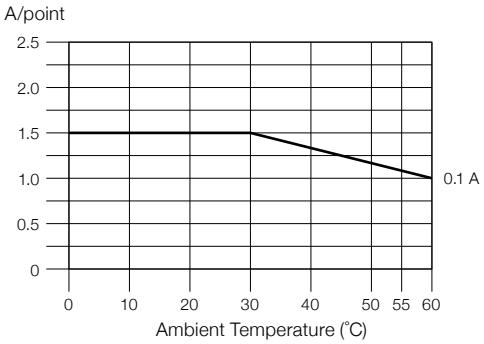
Wiring Diagram



Equivalent Circuit



Derating Chart



Rated current temperature characteristics: All outputs are triggered by the current value of each point shown above. There is no reduction in the number of input/output points used.

DL205 Series
Input/Output Module

■Output Module《AC 12 Points》

D2-12TA

The photo shows the D2-16TD1-2.
(The shape is the same.)

Output Specifications

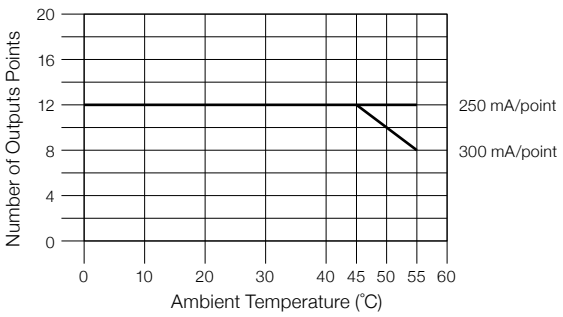
Items	Specifications
Number of Outputs Points	12
Number of Occupied Outputs	16 (4 points are not used. See the following figure.)
Common	6 points 1 common x 2 (Inter-common independence)
Rated Output Voltage	18 to 110 V AC
Output Voltage Range	15 to 132 V AC
Output Type	SSR (Triac)
Peak Voltage	132 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	< 1.5 V AC (> 50 mA) < 4.0 V AC (< 50 mA)
Maximum Load Current	0.3 A/point, 1.8 A/common
Maximum Leakage Current	2 mA (132 V AC, 60 Hz)
Maximum Surge Current	10 A (10 ms)
Minimum Load Current	10 mA
OFF→ON Response Time	1 ms
ON→OFF Response Time	1 ms + 1/2 cycle
Terminal Type	Removable 14P terminal block
Status Display	Logic side
Fuse	(2) 1 unit per common, 3.15 A slow-blow fuse (D2-FUSE-1 (Z-3FK))
Weight	110 g

Addresses Used

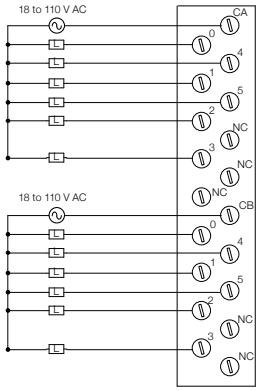
Point	Usage State	Point	Usage State
Qn+0	○	Qn+10	○
Qn+1	○	Qn+11	○
Qn+2	○	Qn+12	○
Qn+3	○	Qn+13	○
Qn+4	○	Qn+14	○
Qn+5	○	Qn+15	○
Qn+6	x	Qn+16	x
Qn+7	x	Qn+17	x

"n" is the starting address

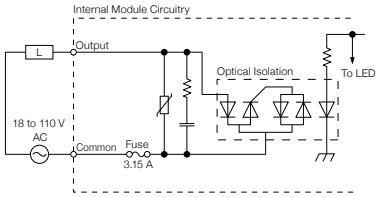
Derating Chart



Wiring Diagram



Equivalent Circuit



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Input/Output Module

■Output Module《Relay 4 Points》

D2-04TRS

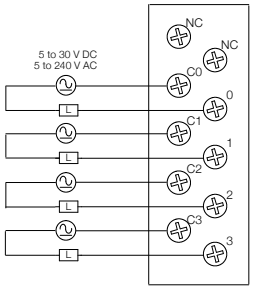
A cover is available.

The photo shows the D2-08TD1.
(The shape is the same.)

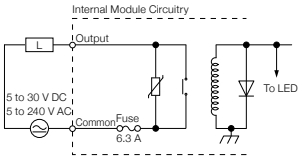
Output Specifications

Items	Specifications
Number of Outputs Points	4
Number of Occupied Outputs	8 (Only the first 4 points are used.)
Common	1 point 1 common x 4 (Inter-common independence)
Output Voltage Range	5 to 30 V DC/5 to 240 V AC
Output Type	Relay a-contact (SPST)
Peak Voltage	30 V DC, 264 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Up to 0.72 V DC
Maximum Load Current	4 A/point, up to 8 A/module (Resistance)
Maximum Leakage Current	0.1 mA (264 V AC)
Maximum Allowable Inrush Current	5 A (Below 10 ms)
Minimum Load Current	10 mA
OFF→ON Response Time	10 ms
ON→OFF Response Time	10 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	1 unit per 1 point, 6.3 A slow-blow fuse Replaceable (D2-FUSE-3 (Z-6FK))
Weight	80 g

Wiring Diagram



Equivalent Circuit

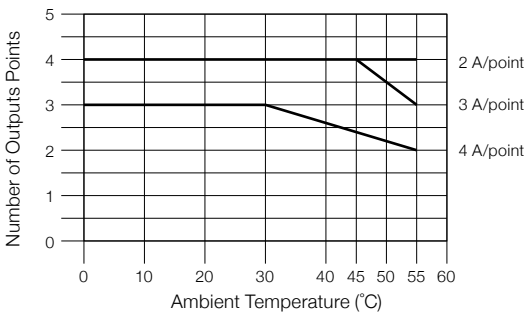


Standard Relay Life (Operation)

Voltage and Load Type	Load Current			
	1 A	2 A	3 A	4 A
24 V DC, Resistance	500 k	200 k	100 k	50 k
24 V DC, Solenoid	100 k	40 k	—	—
110 V AC, Resistance	500 k	250 k	150 k	100 k
110 V AC, Solenoid	200 k	100 k	50 k	—
220 V AC, Resistance	350 k	150 k	100 k	50 k
220 V AC, Solenoid	100 k	50 k	—	—

In the case of a 24 V DC solenoid (induction), it cannot be used for 2 A loads or larger.
In the case of a 100 V AC solenoid (induction), it cannot be used for 3 A loads or larger.
In the case of a 220 V AC solenoid (induction), it cannot be used for 2 A loads or larger.

Derating Chart



DL205 Series
Input/Output Module

■Output Module《Relay 8 Points》

D2-08TR

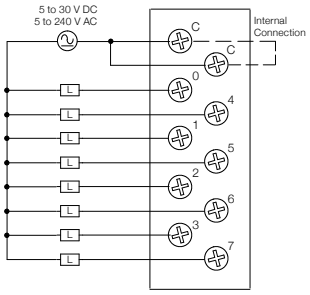
A cover is available.

The photo shows the D2-08TD1.
(The shape is the same.)

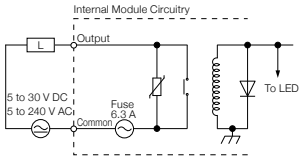
Output Specifications

Items	Specifications
Number of Outputs Points	8
Common	8 points 2 common x 1
Output Voltage Range	5 to 30 V DC/5 to 240 V AC
Output Type	Relay a-contact (SPST)
Peak Voltage	30 V DC, 264 V AC
AC Frequency	47 to 60 Hz
ON-time Voltage Drop	Not applicable
Maximum Load Current	1 A/point, 4 A/common
Maximum Leakage Current	0.1 mA (265 V AC)
Maximum Allowable Inrush Current	Output: 3 A (10 ms) Common: 10 A (10 ms)
Minimum Load Current	5 mA (5 V DC)
OFF→ON Response Time	12 ms
ON→OFF Response Time	10 ms
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	6.3 A slow-blow fuse 1 unit (D2-FUSE-3 (Z-6FK))
Weight	110 g

Wiring Diagram



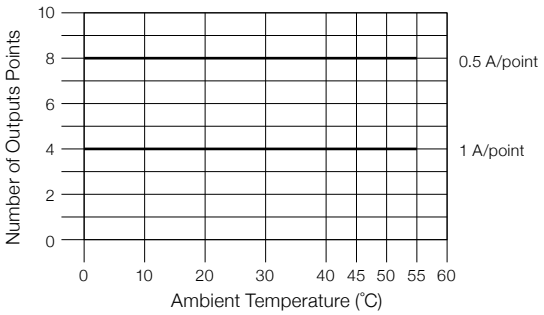
Equivalent Circuit



Standard Relay Life (Operation)

Voltage and Load Type	Load Current
	1 A
24 V DC, Resistance	500 k
24 V DC, Solenoid	100 k
110 V AC, Resistance	500 k
110 V AC, Solenoid	200 k
220 V AC, Resistance	350 k
220 V AC, Solenoid	100 k

Derating Chart



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The specifications and prices described in this catalog were valid when the catalog was issued.
For the latest information, contact our sales persons or see our website.

DL205 Series

Input/Output Module

Output Module《Relay 8 Points》

F2-08TRS

The photo shows the D2-16TD1-2.
(The shape is the same.)

Output Specifications

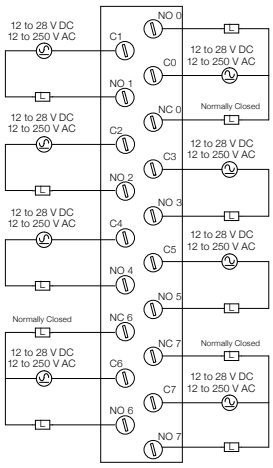
Items	Specifications
Number of Outputs Points	8
Number of Occupied Outputs	8
Common	1 point 1 common x 8 (Inter-common independence)
Output Voltage Range	12 to 28 V DC/12 to 250 V AC, 7 A 120 V DC, 0.5 A
Output Type	Relay c-contact (SPDT) x 3, Relay a-contact (SPST, normally open) x 5
Peak Voltage	150 V DC, 265 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Not applicable
Maximum Load Current	7 A/point3 (According to temperature characteristics)
Maximum Leakage Current	Not applicable
Maximum Allowable Inrush Current	12 A
Minimum Load Current	10 mA (12 V DC)
OFF→ON Response Time	15 ms (Standard)
ON→OFF Response Time	5 ms (Standard)
Terminal Type	Removable 19P terminal block
Status Display	Logic side
Fuse	No
Weight	156 g

Standard Relay life at Room Temperature*1 (Operation)

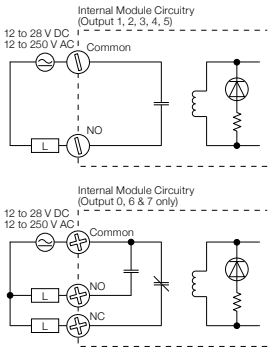
Voltage and Load Type*2	Load Current		
	50 mA	5 A	7 A
24 V DC, Resistance	10 M	600 k	300 k
24 V DC, Solenoid	—	150 k	75 k
110 V AC, Resistance	—	600 k	300 k
110 V AC, Solenoid	—	500 k	200 k
220 V AC, Resistance	—	300 k	150 k
220 V AC, Solenoid	—	250 k	100 k

*1. When the arc-extinguishing technology explained in the DL205 user's manual is applied, the contact point life mentioned above can be extended. Since these modules have no leakage current, they have no built-in buffer circuits. For example, when a diode is mounted between 24 V DC lead loads, the relay life can be greatly extended.
*2. In the case of a 120 V DC, 0.5 A resistance load, the contact point life cycle becomes 200 k cycles.
* The normally closed contact point has a withstand current that is 50% compared with the normally open contact point.

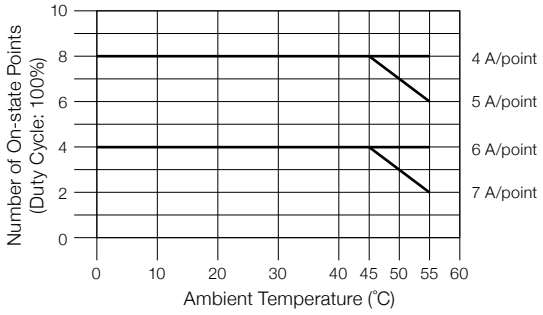
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series
Input/Output Module

Output Module《Relay 8 Points》

F2-08TR

Output Specifications

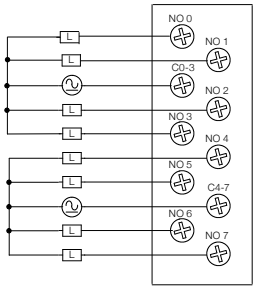
Items	Specifications
Number of Outputs Points	8
Number of Occupied Outputs	8
Common	4 points 1 common x 2 (Inter-common independence)
Output Voltage Range	12 to 28 V DC/12 to 250 V AC, 7A 120 V DC, 0.5 A
Output Type	Relay a-contact (SPST, normally open) x 8
Peak Voltage	150 V DC, 265 V AC
AC Frequency	47 to 63 Hz
ON-time Voltage Drop	Not applicable
Maximum Load Current	10 A/point (According to temperature characteristics) Up to 10 A/common
Maximum Leakage Current	Not applicable
Maximum Allowable Inrush Current	12 A
Minimum Load Current	10 mA (12 V DC)
OFF→ON Response Time	15 ms (Standard)
ON→OFF Response Time	5 ms (Standard)
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Fuse	No
Weight	156 g

Standard Relay Life at Room Temperature*1 (Operation)

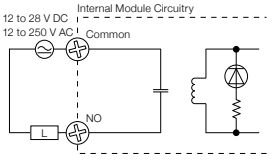
Voltage and Load Type*2	Load Current		
	50 mA	5 A	7 A
24 V DC, Resistance	10 M	600 k	300 k
24 V DC, Solenoid	—	150 k	75 k
110 V AC, Resistance	—	600 k	300 k
110 V AC, Solenoid	—	500 k	200 k
220 V AC, Resistance	—	300 k	150 k
220 V AC, Solenoid	—	250 k	100 k

*1. When the arc-extinguishing technology explained in the DL205 user's manual is applied, the contact point life mentioned above can be extended. Since these modules have no leakage current, they have no built-in buffer circuits. For example, when a diode is mounted between 24 V DC lead loads, the relay life can be greatly extended.
*2. In the case of a 120 V DC, 0.5 A resistance load, the contact point life cycle becomes 200 k cycles.

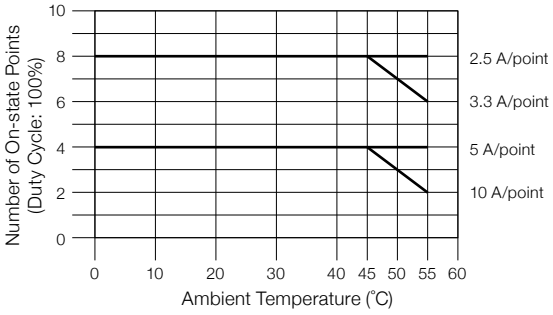
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series

Input/Output Module

Output Module《Relay 12 Points》

D2-12TR

The photo shows the D2-16TD1-2.
(The shape is the same.)

Output Specifications

Items	Specifications
Number of Outputs Points	12
Number of Occupied Outputs	16 points (4 points are not used. See the following figure.)
Common	6 points 1 common x 2 (Inter-common independence)
Output Voltage Range	5 to 30 V DC/5 to 240 V AC
Output Type	Relay a-contact (SPST)
Peak Voltage	30 V DC, 264 V AC
AC Frequency	47 to 60 Hz
ON-time Voltage Drop	Not applicable
Maximum Load Current	1.5 A/point, up to 3 A/common
Maximum Leakage Current	0.1 mA (265 V AC)
Maximum Allowable Inrush Current	Output: 3 A (10 ms) Common: 10 A (10 ms)
Minimum Load Current	5 mA (5 V DC)
OFF→ON Response Time	10 ms
ON→OFF Response Time	10 ms
Terminal Type	Removable 14P terminal block
Status Display	Logic side
Fuse	2 units, 4 A slow-blow fuse, Replaceable (D2-FUSE-4 (Z-4FK))
Weight	130 g

Standard Relay Life (Operation)

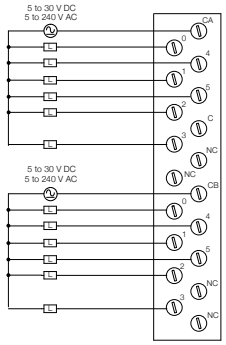
Voltage and Load Type	Load Current
	1 A
24 V DC, Resistance	500 k
24 V DC, Solenoid	100 k
110 V AC, Resistance	500 k
110 V AC, Solenoid	200 k
220 V AC, Resistance	350 k
220 V AC, Solenoid	100 k

Addresses Used

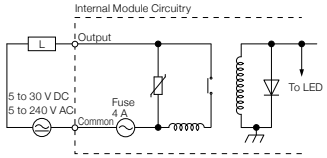
Point	Usage State	Point	Usage State
Qn+0	○	Qn+10	○
Qn+1	○	Qn+11	○
Qn+2	○	Qn+12	○
Qn+3	○	Qn+13	○
Qn+4	○	Qn+14	○
Qn+5	○	Qn+15	○
Qn+6	x	Qn+16	x
Qn+7	x	Qn+17	x

"n" is the starting address

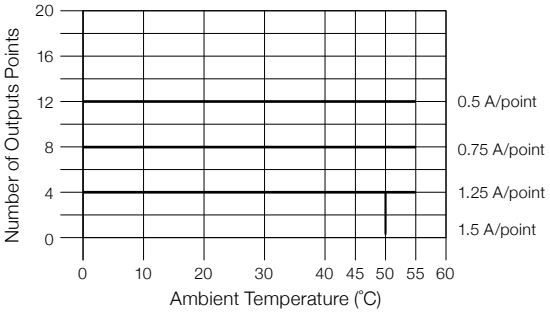
Wiring Diagram



Equivalent Circuit



Derating Chart



DL205 Series
Input/Output Module

Input/Output Module《DC Input 4 points/Relay Output 4 Points》

D2-08CDR

A cover is available.

The photo shows the D2-08TD1.
(The shape is the same.)

Input Specifications

Items	Specifications
Number of Input Points	4 (Sink/source)
Number of Occupied Inputs	8 (Only the first 4 points are used.)
Common	4 points 1 common x 2
Rated Input Voltage	24 V DC
Input Voltage Range	20 to 28 V DC
Peak Voltage	30 V DC
ON Voltage Level	Minimum 19 V DC
OFF Voltage Level	Up to 7 V DC
Input Impedance	4.7 kΩ
Input Current	5 mA (24 V DC)
Maximum Input Current	8 mA (30 V DC)
Minimum ON-state Current	4.5 mA
Maximum OFF-state Current	1.5 mA
OFF→ON Response Time	1 to 10 ms
ON→OFF Response Time	1 to 10 ms
Fuse	No
Terminal Type	Removable 10P terminal block
Status Display	Logic side
Weight	100 g

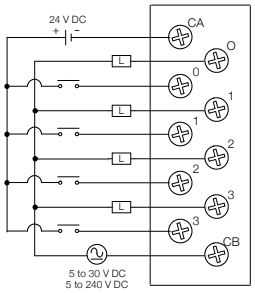
Output Specifications

Items	Specifications
Number of Outputs Points	4
Number of Occupied Outputs	8 points (Only the first 4 points are used.)
Common	4 points 1 common x 1
Output Voltage Range	5 to 30 V DC/5 to 240 V AC
Output Type	Relay a-contact (SPST)
Peak Voltage	30 V DC, 264 V AC
AC Frequency	47 to 63 Hz
Maximum Load Current	1 A/point, 4 A/module
Maximum Leakage Current	0.1 mA (264 V AC)
Maximum Allowable Inrush Current	3 A (< below 100 ms) 10 A (10 ms, common)
Minimum Load Current	5 mA (5 V DC)
OFF→ON Response Time	12 ms
ON→OFF Response Time	10 ms
Fuse	1 unit, 6.3 A slow-blow fuse, Replaceable (D2-FUSE-3 (Z-6FK))

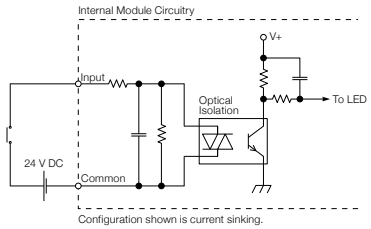
Standard Relay Life (Operation)

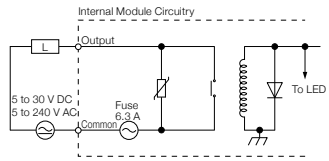
Voltage and Load Type	Load Current
	1 A
24 V DC, Resistance	500 k
24 V DC, Solenoid	100 k
110 V AC, Resistance	500 k
110 V AC, Solenoid	200 k
220 V AC, Resistance	350 k
220 V AC, Solenoid	100 k

Wiring Diagram

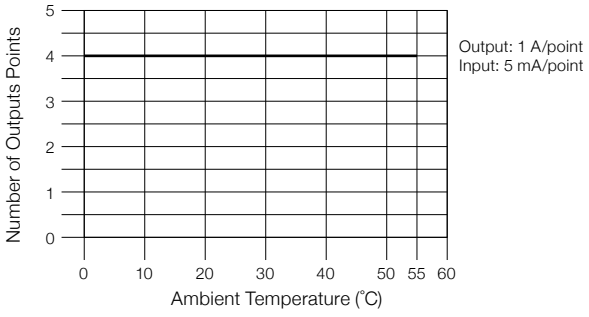


Equivalent Circuit





Derating Chart



Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
Programmer
DirectSOFT
Terminator I/O
Process Control
ZIP LINK

Features
Specifications
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SZ/DL205 Model Number Correlation Table

DL205 Series

Analog Module

Input Module《4 Channels》

F2-04AD-1

A cover is available.

The photo shows the F2-08AD-1.
(The shape is the same.)

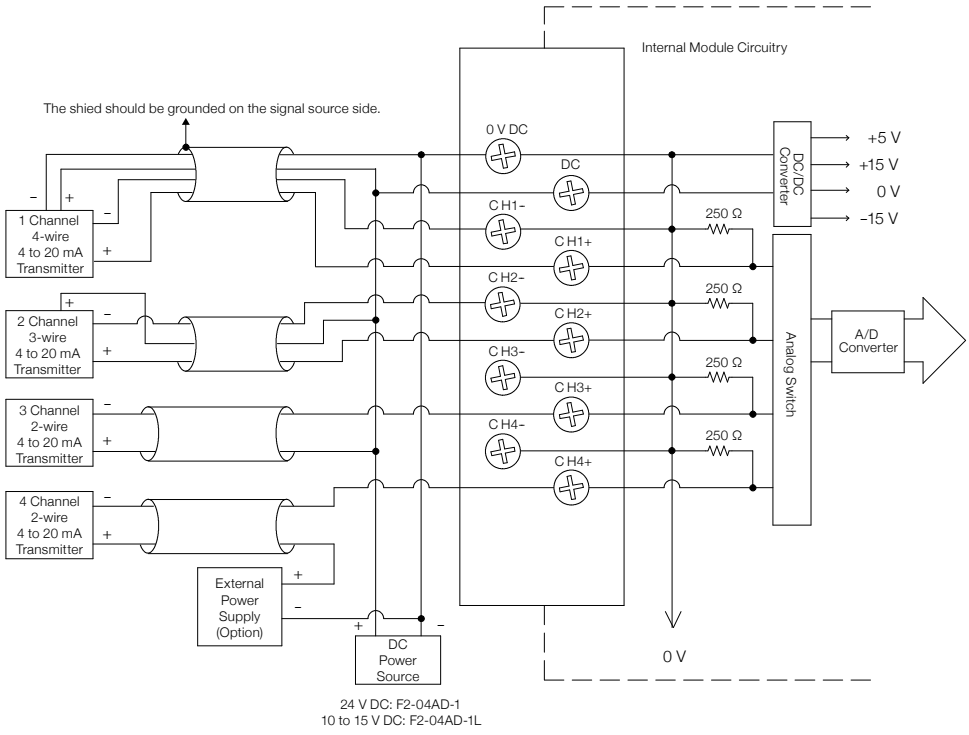
Input Specifications

Items	Specifications
Number of Channels	4, single end (Non-balanced-type) (Common x 1)
Input Range	4 to 20 mA
Resolution	12-bit
Active Low-pass Filtering	-3 dB (80 Hz), 2 poles (-12 dB per octave)
Input Impedance	250 Ω ±0.1%, 1/2 W
Absolute Maximum Rating	-40 mA to +40 mA
Conversion Method	Successive approximation
Conversion Time	Maximum 1 channel per scan (When the D2-230 is used) Maximum 4 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Input Stability	±1 count*

Items	Specifications
Full Scale Error	Maximum ±12 count (20 mA current input) The erroneous offset is not included.
Offset Error	Maximum ±7 count (4 mA current input)
Step Response Time	4 ms (standard) to 95% of all step changes
Maximum Error	±0.5%: 25°C ±0.65%: 0 to 60°C
Accuracy Against Temperature	Maximum ±50 ppm/°C full scale (The maximum erroneous offset is included.)
Recommended Fuse	0.032 A, series 217, fast-blow, current input
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, channel ID bid x 2, diagnosis bit x 2)
Status Display	No
Weight	86 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Wiring Diagram



24 V DC: F2-04AD-1
10 to 15 V DC: F2-04AD-1L

Although several external power sources can be used, all the commons of each power source should be connected. When a 4 to 20 mA current loop is used, it is recommended to use a 217 series 0.032 A fast-blow fuse. If the power source common of the external power source is not connected to the 0 V DC of this module, be sure to isolate the output of the external transmitter. To prevent a "grand loop" error, it is recommended to use the following types as a 4 to 20 mA transmitter.
Two-wire system or three-wire system: One in which the input signal is isolated from the power source.
Four-wire system: One in which the input signal, power source, and 4 to 20 mA output are isolated from one another.

DL205 Series
Analog Module

■Input Module《8 Channels》

F2-08AD-1

A cover is available.

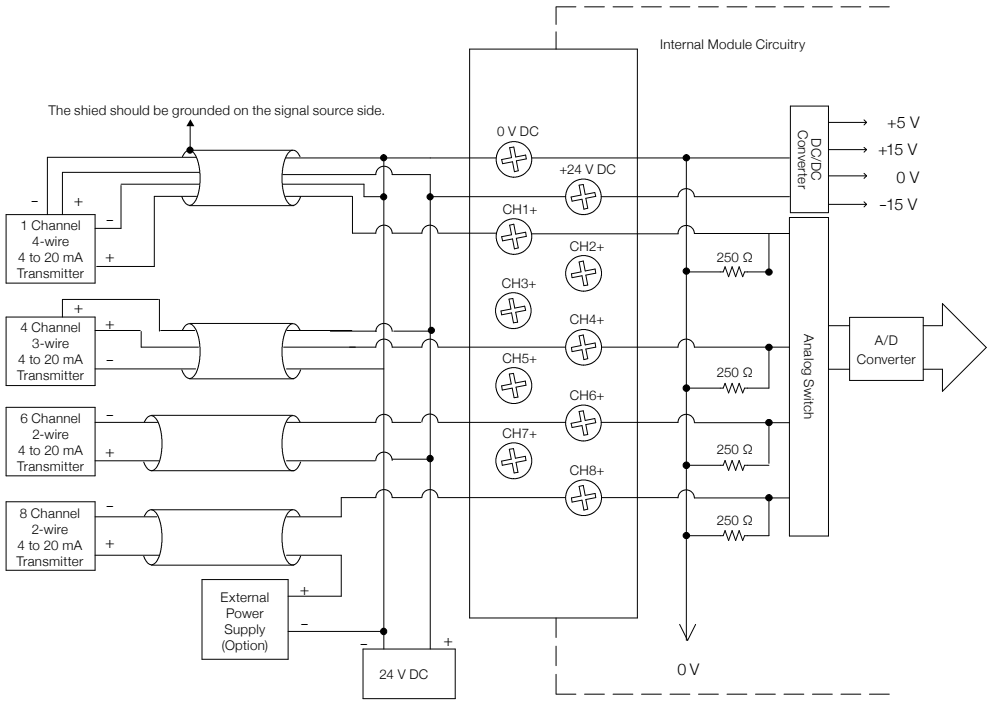
Input Specifications

Items	Specifications
Number of Channels	8, single end (Non-balanced-type) (Common x 1)
Input Range	4 to 20 mA
Resolution	12-bit
Active Low-pass Filtering	-3 dB (200 Hz, -6 dB per octave)
Input Impedance	250 Ω±0.1%, 1/2 W current input
Absolute Maximum Rating	-45 mA to +45 mA
Conversion Method	Successive approximation
Conversion Time	Maximum 1 channel per scan (When the D2-230 is used) 8 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Input Stability	±1 count

Items	Specifications
Full Scale Error	Maximum ±5 count (20 mA current input) The erroneous offset is not included.
Offset Error	Maximum ±2 count (4 mA current input)
Step Response Time	7 ms (standard) to 95% of all step changes
Maximum Error	±0.1%: 25˚C ±0.25%: 0 to 60˚C
Accuracy Against Temperature	Maximum ±50 ppm/˚C full scale (Including erroneous offset up to 2 counts)
Recommended Fuse	0.032 A, series 217, fast-blow, current input
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, channel ID bid x 3, diagnosis bit x 1)
Weight	86 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Wiring Diagram



Although several external power sources can be used, all the commons of each power source should be connected. When a 4 to 20mA current loop is used, it is recommended to use a 217 series 0.032A fast-blow fuse. If the power source common of the external power source is not connected to the 0 V DC of this module, be sure to isolate the output of the external transmitter. To prevent a "grand loop" error, it is recommended to use the following types as a 4 to 20mA transmitter.
Two-wire system or three-wire system: One in which the input signal is isolated from the power source.
Four-wire system: One in which the input signal, power source, and 4 to 20mA output are isolated from one another.

Features
Specifications
Dimensions
CPU Specifications
Special Module
Input/Output Module
Analog Module
Base Unit
Precautions when Switching from an SZ
SZ/DL205 Model Number Correlation Table

DL205 Series

Analog Module

■Input Module《4 Channels》

F2-04AD-2

A cover is available.

The photo shows the F2-08AD-1.
(The shape is the same.)

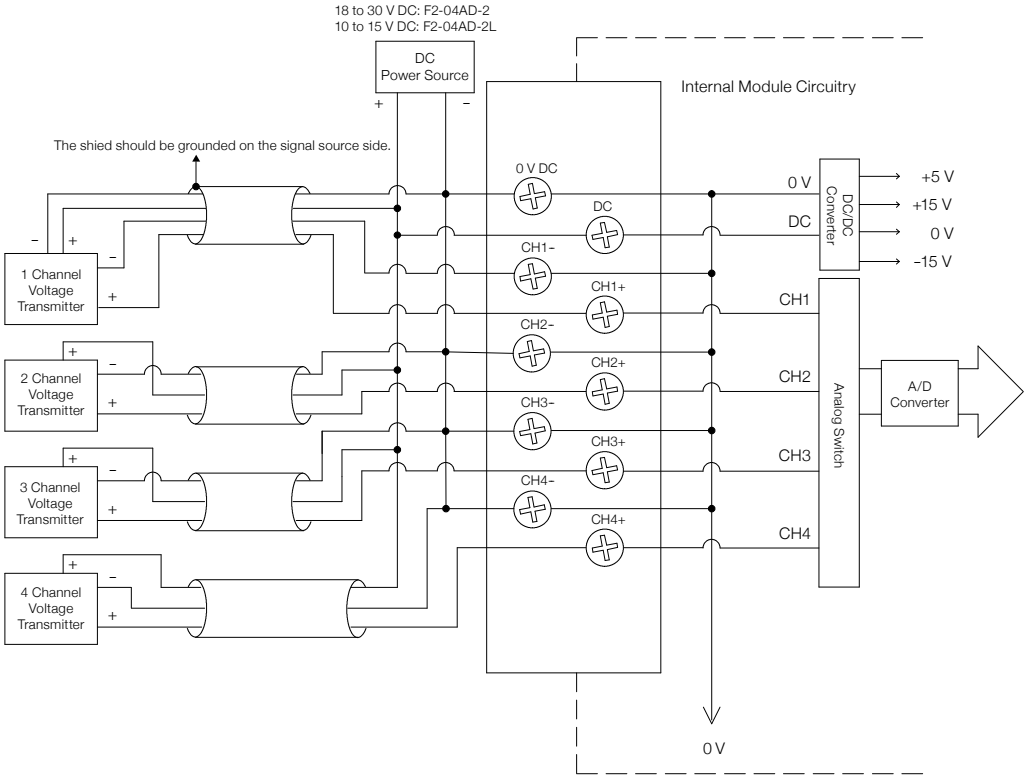
Input Specifications

Items	Specifications
Number of Channels	4, single end (Non-balanced-type) (Common x 1)
Input Range	0 to 5 V, 0 to 10 V, ±5 V, ±10 V
Resolution	12-bit unipolar 13-bit (-4095 to 4095) bipolar
Active Low-pass Filtering	-3 dB (80 Hz), 2 poles (-12 dB per octave)
Input Impedance	> 20 MΩ
Absolute Maximum Rating	-75 to +75 V DC
Conversion Method	Successive approximation
Conversion Time	Maximum 1 channel per scan (When the D2-230 is used) Maximum 4 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale) Maximum ±2 count (Bipolar)
Input Stability	±1 count

Items	Specifications
Full Scale Error	Maximum ±3 count, the erroneous offset is not included.
Offset Error	Maximum ±1 count (0 V input)
Step Response Time	10 ms (standard) to 95% of all step changes
Maximum Error	±0.1%: 25°C ±0.3%: 0 to 60°C
Accuracy Against Temperature	Maximum ±50 ppm/°C full scale (The maximum erroneous offset is included.)
Number of Occupied Inputs	Input 16 points (I) (Binary data bit x 12, channel ID bid x 2)
Status Display	No
Weight	86 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Wiring Diagram



DL205 Series
Analog Module

■Input Module《8 Channels》

F2-08AD-2

A cover is available.

The photo shows the F2-08AD-1.
(The shape is the same.)

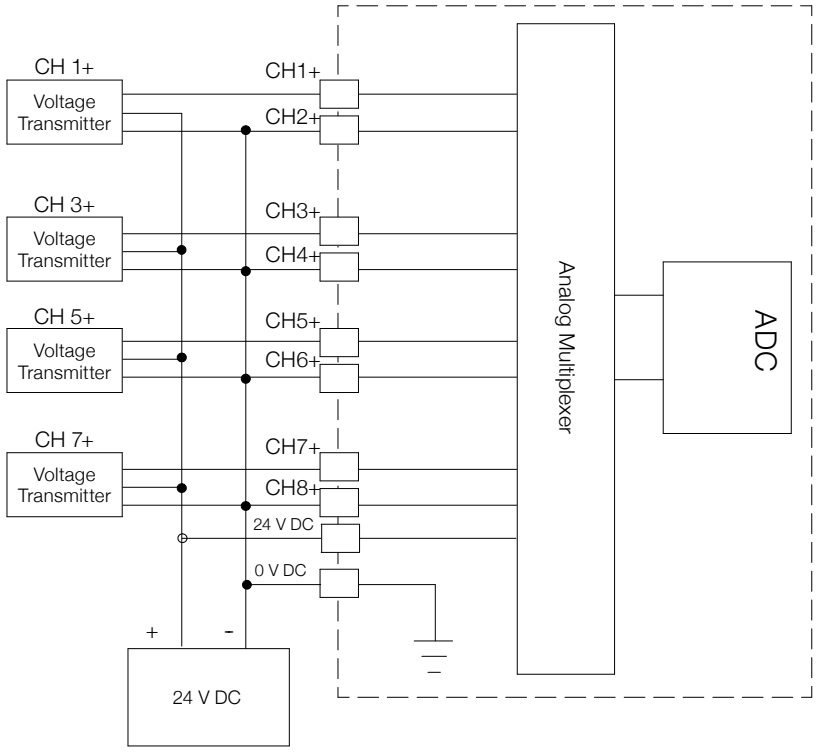
Input Specifications

Items	Specifications
Number of Channels	8, single end (Non-balanced-type) (Common x 1)
Input Range	0 to 5 V, 0 to 10 V, ±5 V, DC ±10 V
Resolution	12-bit unipolar 13-bit (-4095 to 4095) bipolar
Active Low-pass Filtering	-3 dB (200 Hz), (-6 dB per octave)
Input Impedance	> 20 MΩ
Absolute Maximum Rating	-75 to +75 V DC
Conversion Method	Successive approximation
Conversion Time	Maximum 1 channel per scan (When the D2-230 is used) 8 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Input Stability	±1 count

Items	Specifications
Full Scale Error	Maximum ±3 count, the erroneous offset is not included.
Offset Error	Maximum ±1 count (0 V input)
Step Response Time	4 ms (standard) to 95% of all step changes
Maximum Error	±0.1%: 25˚C ±0.3%: 0 to 60˚C
Accuracy Against Temperature	Maximum ±50 ppm/˚C full scale (Including erroneous offset up to 2 counts)
Number of Occupied Inputs	Input16 points (I) (Binary data bit x 12, channel ID bid x 3, sign bit x 1, diagnosis bit x 1)
Weight	118 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value. The F2-08AD-2 has a built-in circuit that automatically detects failure and the open state of the sender.

Wiring Diagram



DL205 Series

Analog Module

■Output Module《2 Channels》

F2-02DA-1 **F2-02DA-1L**

A cover is available.

A cover is available.

The photo shows the F2-02AD-1.
(The shape is the same.)

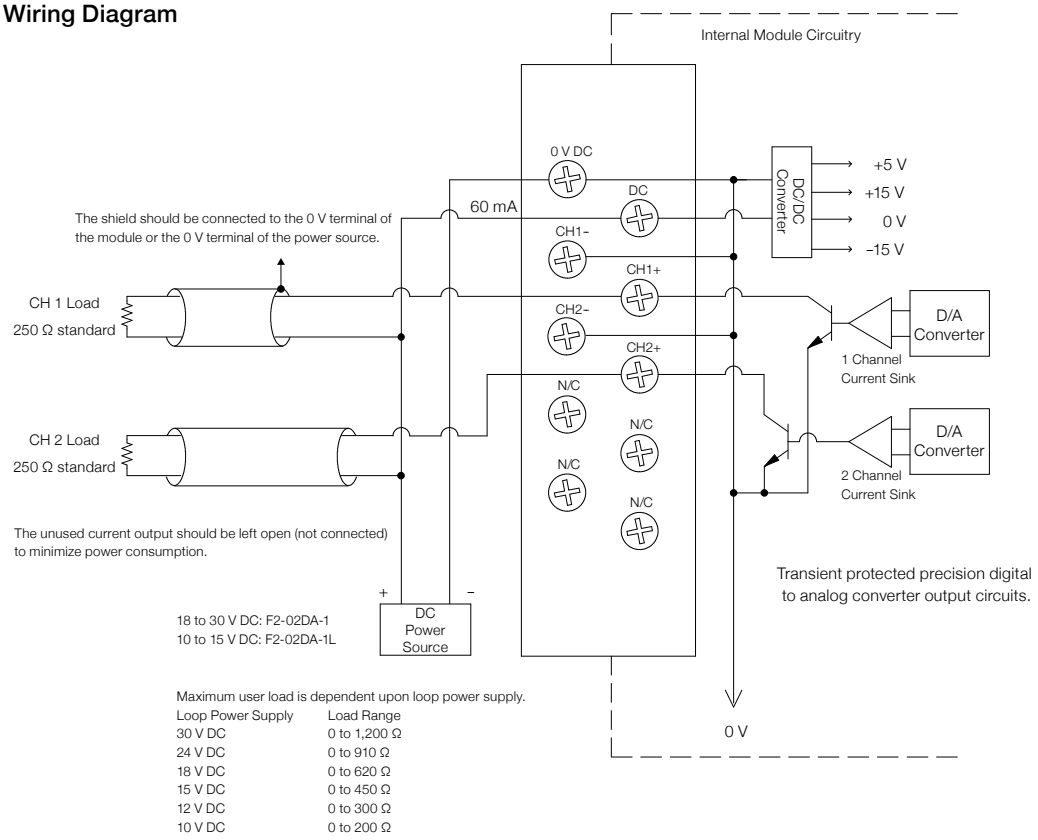
Output Specifications

Items	Specifications
Number of Channels	2
Output Range	4 to 20 mA
Resolution	12-bit
Output Type	Single end (Non-balanced-type), common x 1
Maximum Loop Power Supply	30 V DC
Peak Output Voltage	40 V DC (Fixed by transient voltage protection element)
Load impedance	0 Ω minimum
Maximum Load/Power Supply	620 Ω/18 V, 910 Ω/24 V, 1,200 Ω/30 V
Analog Data Update	Maximum 1 channel per scan (When the D2-230 is used) maximum 2 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Conversion Settling Time	Up to 100 µs (Full-scale change)

Items	Specifications
Full Scale Error	Maximum ±5 count, 20 mA: 25˚C The erroneous offset is included.
Offset Error	Maximum ±3 count, 4 mA:25˚C
Accuracy Against Temperature	Maximum ±50 ppm/˚C full scale (Including erroneous offset up to 2 counts)
Maximum Error	±0.1%: 25˚C ±0.3%: 0 to 60˚C
Number of Occupied Outputs	Output 16 points (Q) (Binary data bit x 12, channel ID bid x 2)
Status Display	No
Weight	80 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.
* A 24 V DC external power source can be used for the F2-02DA-1, and a 12 V DC external power source can be used for the F2-02DA-1L.

Wiring Diagram



Maximum user load is dependent upon loop power supply.

Loop Power Supply	Load Range
30 V DC	0 to 1,200 Ω
24 V DC	0 to 910 Ω
18 V DC	0 to 620 Ω
15 V DC	0 to 450 Ω
12 V DC	0 to 300 Ω
10 V DC	0 to 200 Ω

DL205 Series
Analog Module

■Output Module《2 Channels》

F2-02DAS-1

A cover is available.

The photo shows the F2-02AD-1.
(The shape is the same.)

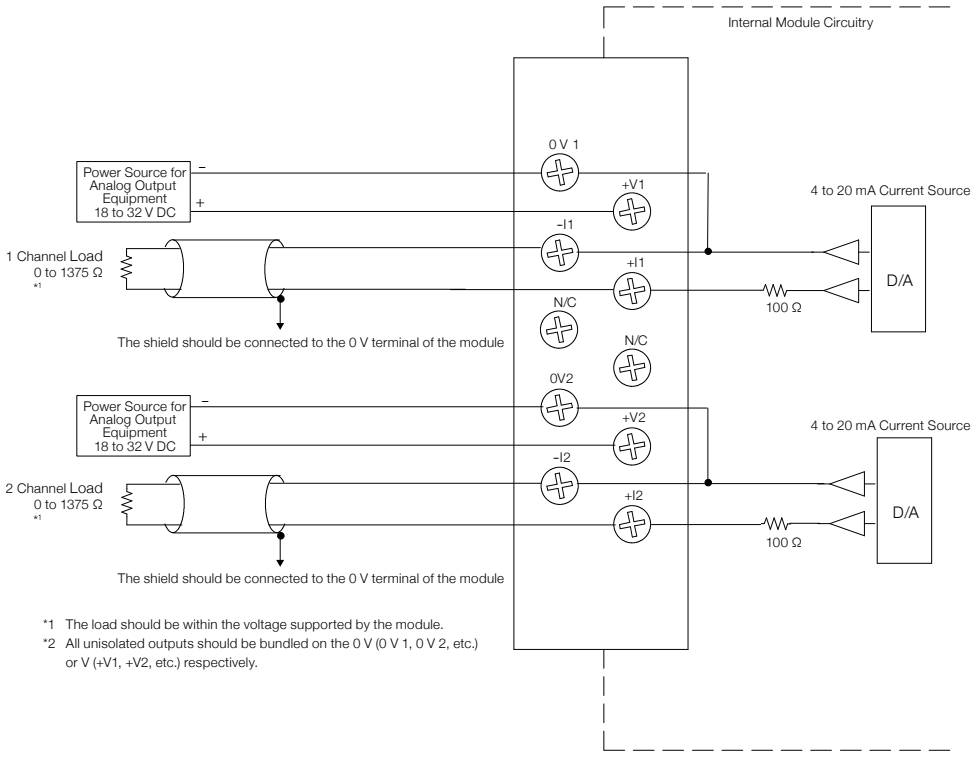
Output Specifications

Items	Specifications
Number of Channels	2 (Isolation specifications)
Output Range	4 to 20 mA
Resolution	16-bit
Output Type	Current source
Isolation Voltage	±750 V continuous, channel-to-channel, between channel and logic
Loop Power Supply	18 to 32 V DC
External Power Supply	18 to 32 V DC, 50 mA/channel
Output Loop Supporting	Vin to 2.5 V
Load impedance	0 to 1375 Ω (32 V)
Maximum Load/Power Supply	375 Ω/12 V, 975 Ω/24 V, 1375 Ω/32 V
Analog Data Update	Maximum 1 channel per scan (When the D2-230 is used) maximum 2 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±10 count (0.015% of full scale)
Conversion Settling Time	3 ms ~ 0.1% of full scale

Items	Specifications
Gain Error	±32 count (±0.05%)
Offset Error	±13 count (±0.02%)
Accuracy Against Temperature	50 ppm/°C
Maximum Error	±0.07%: 25°C ±0.18%: 0 to 60°C
Number of Occupied Outputs	Output 32 points (Q) (Binary data bit x 16, channel ID bid x 2)
Weight	109 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Wiring Diagram


Internal Module Circuitry
0 V 1
+V1
-I1
+I1
N/C
N/C
0V2
+V2
-I2
+I2
Power Source for Analog Output Equipment 18 to 32 V DC
1 Channel Load 0 to 1375 Ω *1
The shield should be connected to the 0 V terminal of the module
4 to 20 mA Current Source
D/A
100 Ω
Power Source for Analog Output Equipment 18 to 32 V DC
2 Channel Load 0 to 1375 Ω *1
The shield should be connected to the 0 V terminal of the module
4 to 20 mA Current Source
D/A
100 Ω

*1 The load should be within the voltage supported by the module.
*2 All unisolated outputs should be bundled on the 0 V (0 V 1, 0 V 2, etc.) or V (+V1, +V2, etc.) respectively.

DL205 Series

Analog Module

Output Module《8 Channels》

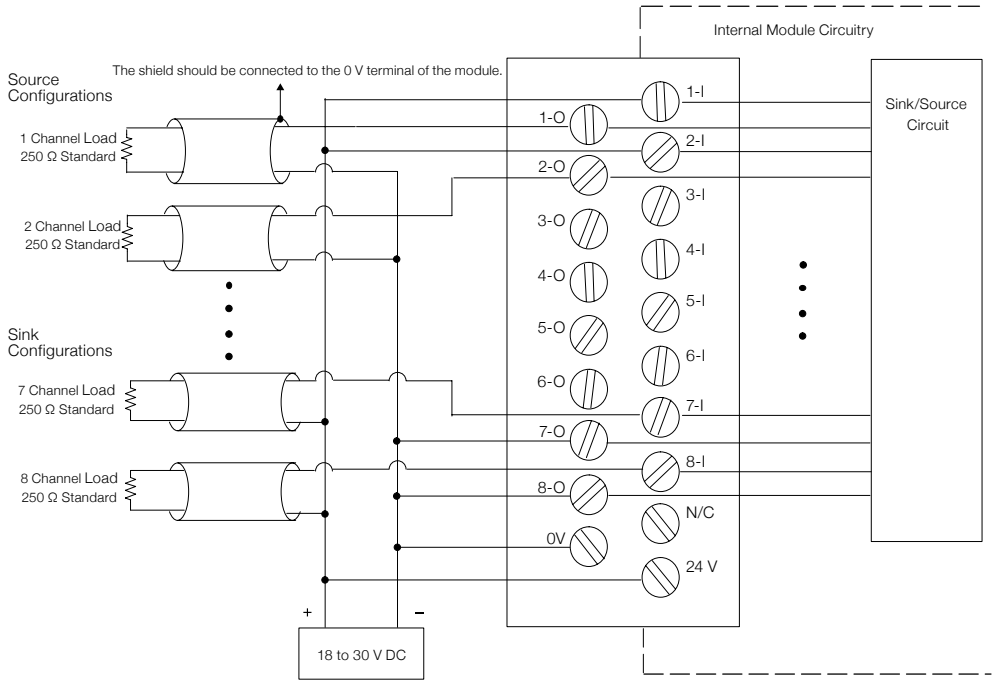
F2-08DA-1

Output Specifications

Items	Specifications
Number of Channels	8, single end (Non-balanced-type)
Output Range	4 to 20 mA
Resolution	12-bit
Output Type	Current sink or current source
Maximum Loop Power Supply	30 V DC
Source Load	0 to 400 Ω (18 to 30 V DC)
Sink Load	0 to 600 Ω/18 V, 0 to 900 Ω/24 V, 0 to 1,200 Ω/30 V
Total Load (Sink + source)	600 Ω/18 V, 900 Ω/24 V, 1,200 Ω/30 V
Analog Data Update	Maximum 1 channel per scan (When the D2-230 is used) Maximum 8 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±2 count (0.050% of full scale)
Conversion Settling Time	Up to 400 µs (Full-scale change)

Items	Specifications
Full Scale Error	Maximum ±12 count, sink (Any load) Maximum ±12 count, source (125 Ω load) Maximum ±18 count, source (250 Ω load) Maximum ±26 count, source (400 Ω load)
Offset Error	Maximum ±9 count, sink (Any load) Maximum ±9 count, source (125 Ω load) Maximum ±11 count, source (250 Ω load) Maximum ±13 count, source (400 Ω load)
Maximum Full-scale Error (At 60°C)	0.5%, sink (Any load), sink&source (125 Ω load) 0.64% source (250 Ω load) 0.83% source (400 Ω load)
Maximum Full-scale Error	0.3%, sink (Any load), sink and source (125 Ω load) 0.44% source (250 Ω load) 0.63% source (400 Ω load)
Number of Occupied Outputs	Output 16 points (Q) (Binary data bit x 12, channel ID bid x 3, output enable bit x 1)
Weight	80 g

Wiring Diagram



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DL205 Series
Analog Module

■Output Module《2 Channels》

F2-02DA-2 **F2-02DA-2L**

A cover is available.

The photo shows the F2-02AD-1.
(The shape is the same.)

A cover is available.

The photo shows the F2-02AD-1.
(The shape is the same.)

Output Specifications

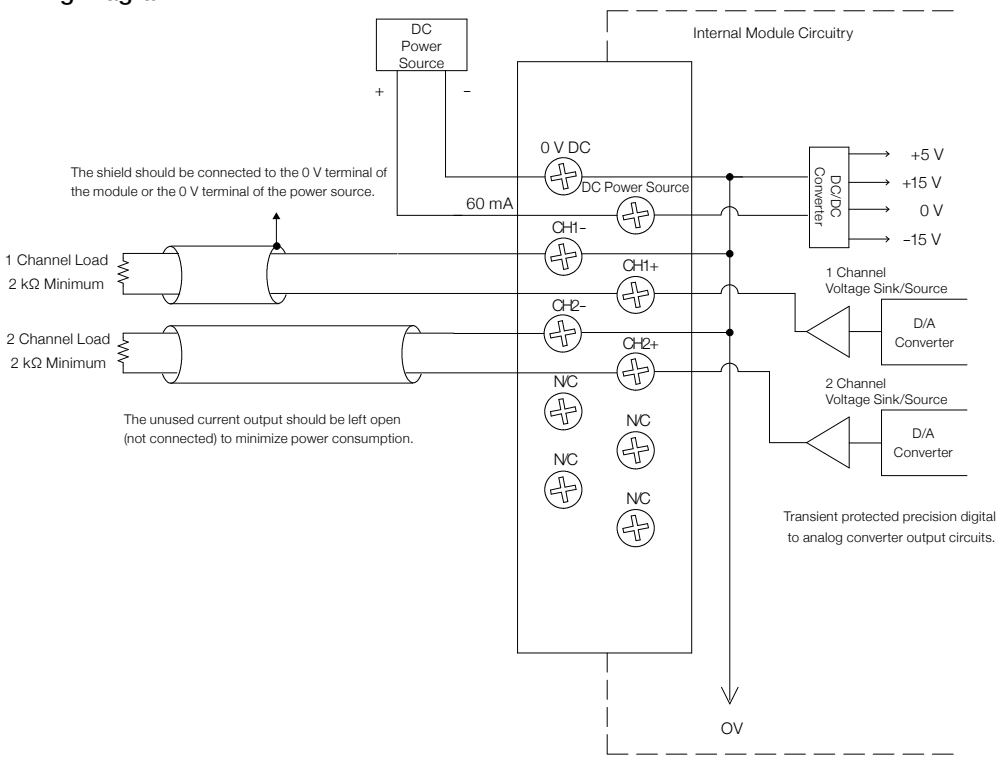
Items	Specifications
Number of Channels	2
Output Range	0 to 5 V, 0 to 10 V, ±5 V, ±10 V
Resolution	12-bit
Output Type	Single end (Non-balanced-type), common x 1
Peak Output Voltage	15 V DC (Fixed by transient voltage protection element)
Load impedance	Minimum 2 kΩ
Load Capability	Up to 0.01 µF
Analog Data Update	Maximum 1 channel per scan (When the D2-230 is used) maximum 2 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Conversion Settling Time	Up to 5 µs (Full-scale change)

Items	Specifications
Full Scale Error	Maximum ±12 count, unipolar: 25˚C Maximum ±16 count, bipolar: 25˚C The erroneous offset is included.
Offset Error	Maximum ±3 count, unipolar: 25˚C Maximum ±8 count, bipolar: 25˚C
Accuracy Against Temperature	Maximum ±50 ppm/˚C full scale (Including erroneous offset up to 2 counts)
Maximum Error	±0.3%, unipolar range: 25˚C ±0.45%, unipolar range: > 25˚C ±0.4%, bipolar range: 25˚C ±0.55%, bipolar range: > 25˚C
Number of Occupied Outputs	Output 16 points (Q) (Binary data bit x 12, channel ID bid x 2)
Weight	80 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

* A 24 V DC external power source can be used for the F2-02DA-2, and a 12 V DC external power source can be used for the F2-02DA-2L.

Wiring Diagram



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DL205 Series

Analog Module

■Output Module《2 Channels》

F2-02DAS-2

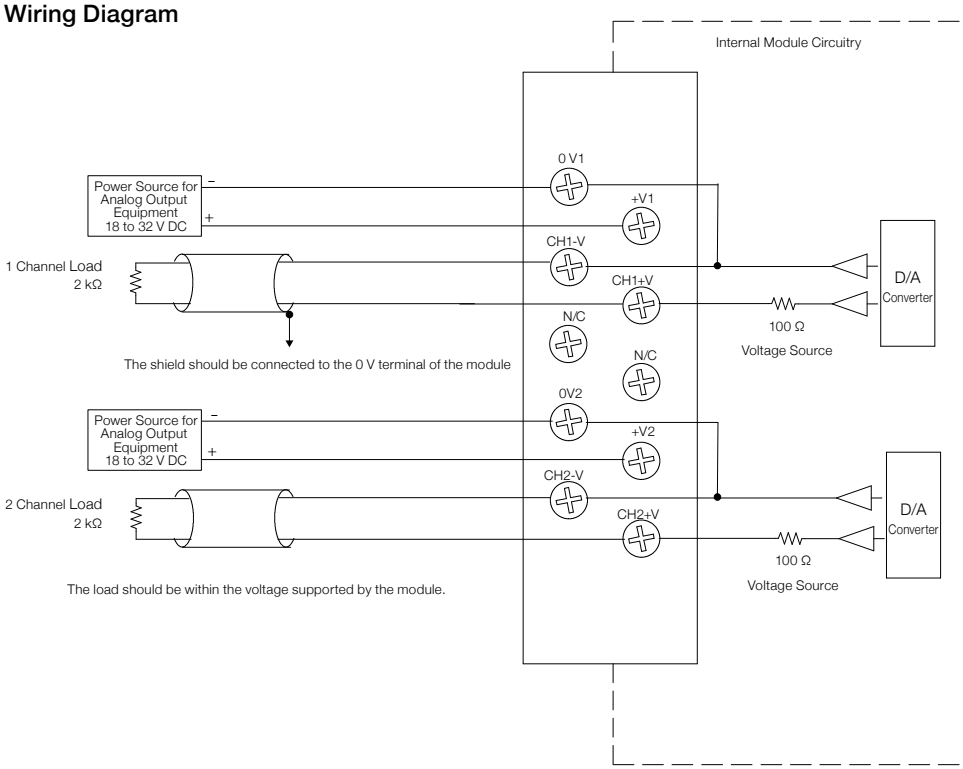
A cover is available.

The photo shows the F2-02AD-1.
(The shape is the same.)

Output Specifications

Items	Specifications
Number of Channels	2 (Isolation specifications)
Output Range	0 to 5 V DC, 0 to 10 V DC
Resolution	16-bit
Isolation Voltage	±750 V continuous, channel-to-channel, between channel and logic
Load impedance	Minimum 2kΩ
Analog Data Update	Maximum 1 channel per scan (When the D2-230 is used) maximum 2 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±10 count (±0.015% of full scale)
Conversion Settling Time	3 ms to 0.1% of full scale
Gain Error	±32 count (±0.05%)
Offset Error	±13 count (±0.02%)
Accuracy Against Temperature	50 ppm/°C
Maximum Error	±0.07%: 25°C ±0.18%: 0 to 60°C
Number of Occupied Outputs	Output 32 points (Q) (Binary data bit x 16, channel ID bid x 2)
Weight	109 g

Wiring Diagram



DL205 Series
Analog Module

Output Module《8 Channels》

F2-08DA-2

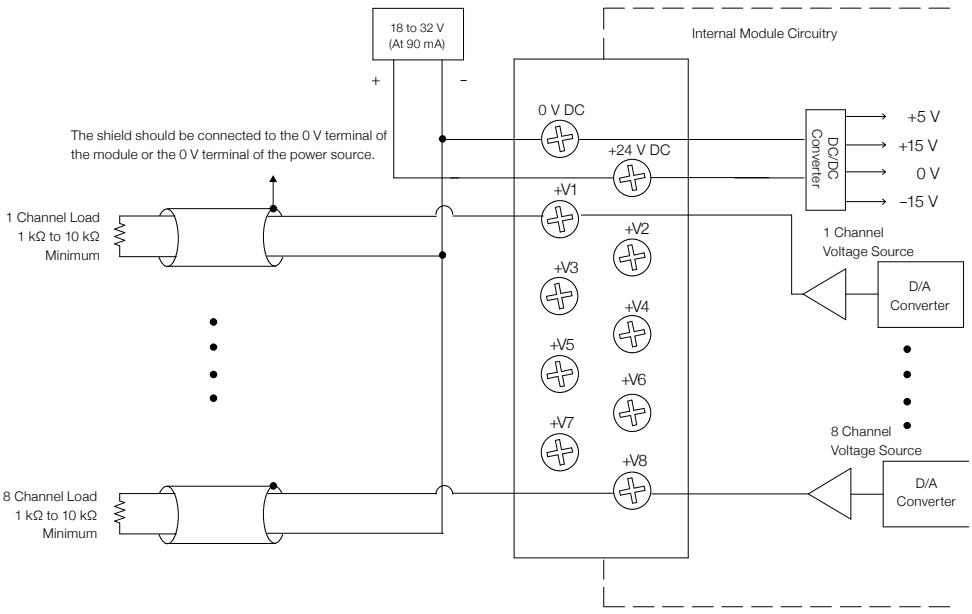
A cover is available.

Output Specifications

Items	Specifications
Number of Channels	8, single end (Non-balanced-type), common x 1
Output Range	0 to 5 V DC, 0 to 10 V DC
Resolution	12-bit
Peak Output Voltage	15 V DC (Fixed by transient voltage protection element)
Load impedance	1 kΩ to 10 kΩ
Load Capability	Up to 0.01 μF
Analog Data Update	Maximum 1 channel per scan (When the D2-230 is used) Maximum 8 channels per scan (When the D2-240, D2-250-1, and D2-260 are used)
Linearity Error (End-to-end)	Maximum ±1 count (0.025% of full scale)
Conversion Settling Time	Up to 400 μs (Full-scale change) 4.5 ms to 9 ms (Digital output → Analog output)
Full Scale Error	Up to 12 count, unipolar: 25˚C, The erroneous offset is included.
Offset Error	Maximum ±3 count, unipolar: 25˚C
Accuracy Against Temperature	Maximum ±57 ppm/˚C full scale change (Including erroneous offset up to 2 counts)
Maximum Error	±0.45%: to 60˚C
Number of Occupied Outputs	Output 16 points (Q) (Binary data bit x 12, channel ID bid x 3, output enable bit x 1)
Weight	109 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Wiring Diagram



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DL205 Series

Analog Module

Input/Output Module《Input 4 Channels/Output 2 Channels》

F2-4AD2DA

A cover is available.

Input/Output Specification

Items	Specifications
Number of Input Channels	4, single end (Non-balanced-type) (Common x 1)
Number of Output Channels	2, single end (Non-balanced-type)
Ranges	4 to 20 mA current (Current sinking)
Resolution	12-bit
Peak Voltage	DC 75 V, current output
Maximum Continuous Overload	-40 to +40 mA, each current output
Input Impedance	250 Ω, ±0.1%, 1/2 W, 25 ppm/°C current input resistance
External Load Resistance	0 Ω minimum, current output
Maximum Loop Voltage	30 V DC
Recommended Fuse	0.032 A, series 217, fast-blow, Current input
Maximum Load/Power Supply	910 Ω/24 V, current output 620 Ω/18 V, 1,200 Ω/30 V
Active Low-pass Filtering	-3 dB (20 Hz), 2 poles (-12 dB per octave)
Linearity Error (Best Fit)	±1 count (±0.025% of full scale) maximum
Output Set Time	Up to 100 µs (Full-scale change)
Accuracy Against Temperature	Maximum ±50 ppm/°C full scale (Including maximum offset change)
Maximum Error	±0.1%: 25°C ±0.3%: 0 to 60°C
Occupied I/O Point	Input 16 points (I) (Binary data bit x 12, channel ID bid x 2, diagnosis bit x 2) Output 16 points (Q) (Binary data bit x 12, channel enable bit x 2)

Items	Specifications
Analog Data Update	Maximum 4 input channels per scan (When the D2-240, D2-250-1 and D2-260 are used), Maximum 2 output channels per scan (When the D2-240U, D2-250-1 and D2-260 are used), 1 input and 1 output channel per maximum scan (When the D2-230 is used)
Weight	118 g

"1 count" in the specifications table is equivalent to 1 least significant bit of the analog data value.

Note 1: Shields should be grounded on the respective signal source sides.

Note 2: Unused channels should be left open to minimize power consumption.

Note 3: Although several external power sources can be used, all the commons of the power sources should be connected.

Note 4: When a 4 to 20 mA current loop is used, it is recommended to use a 217 series 0.032 A, fast-blow fuse.

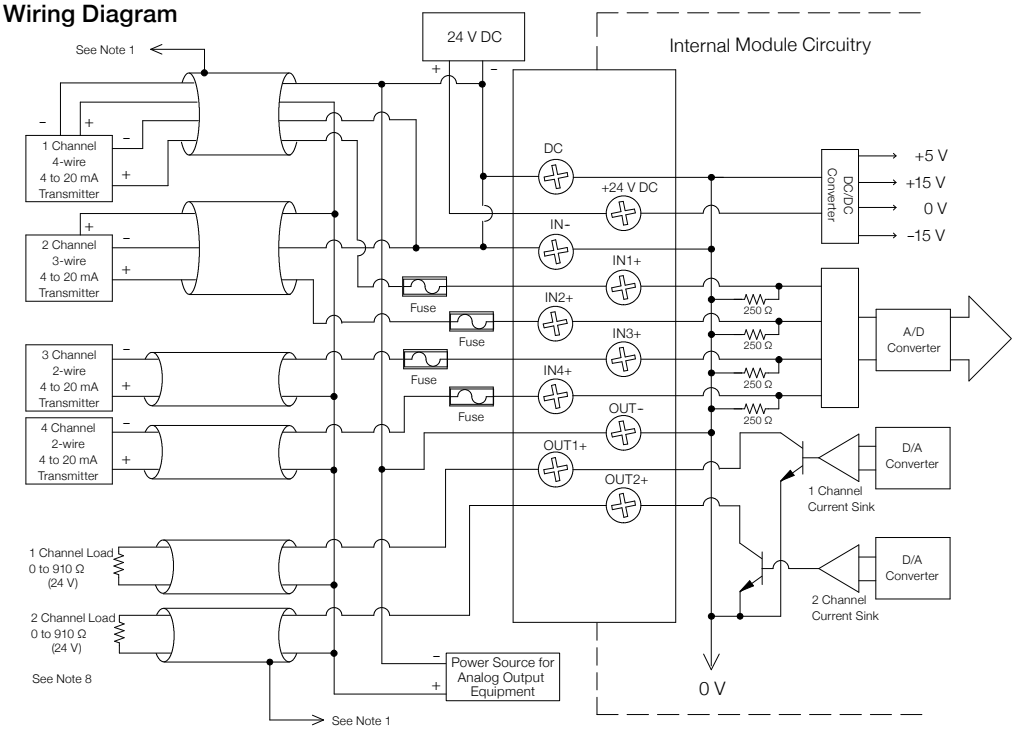
Note 5: If the power source common of the external power source is not connected to the 0 V DC of this module, be sure to isolate the output of the external transmitter. To prevent a "grand loop" error, it is recommended to use the following types as a 4 to 20 mA transmitter.
Two-wire system or three-wire system: One in which the input signal is isolated from the power source.
Four-wire system: One in which the input signal, power source, and 4 to 20 mA output are isolated from one another.

Note 6: If the analog channel is reversely connected, incorrect data values are written in the channel.

Note 7: To prevent the occurrence of minor errors due to the disconnections on the terminal block, the 0 V DC, IN- and OUT- points of the terminal block should be connected as shown in the figure below. To enhance the performance of the module to the accuracy specifications, it is insufficient to only connect these nodes in the module.

Note 8: Select the analog output equipment resistance according to the maximum load / power source listed in the output specifications.

Wiring Diagram



DL205 Series
Analog Module

■Input/Output Module《Input: 8 Channels/Output: 4 Channels》

F2-8AD4DA-1 (Current type)　　**F2-8AD4DA-2** (Voltage type)

* Only the D2-250-1, D2-260 and the D2-265 CPU can be used.

The photo shows the F2-8AD4DA-1.
(The shape is the same.)

Input Specifications

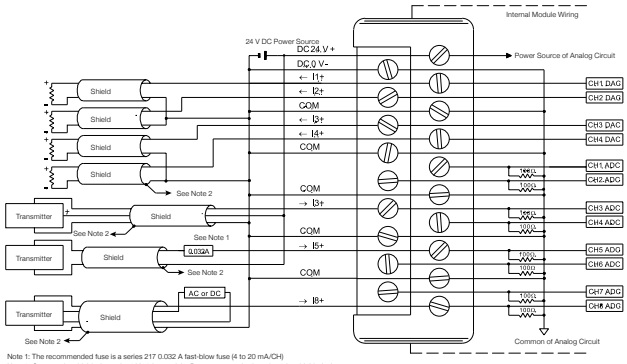
Items	F2-8AD4DA-1	F2-8AD4DA-2
Number of Channels	8, single end (1 common)	
Input Range	4 to 20mA	0 to 5 V, 0 to 10 V
Resolution	12, 14, 16-bit selectable	
External 24 V DC Power Supply	100 mA/ 18 to 24.4 V DC	80 mA/ 18 to 26.4 V DC
Absolute Maximum Rating	±45 mA	±100 V
Input Impedance	100 Ω 0.1% 1/4 W	10 MΩ or more
Active Low-pass Filtering	-3 dB (80 Hz)	
Conversion Time	12-bit=1.25 ms/channel 14-bit=6 ms/channel 16-bit=25 ms/channel	
Conversion Method	Successive approximation	
Accuracy Against Temperature	Maximum ±50 ppm/°C	
Maximum Error	0.2%	0.1%
Full Scale Error	12-bit = Maximum ±1 count (±0.025% range) 14-bit = Maximum ±4 count (±0.025% range) 16-bit = Maximum ±16 count (±0.025% range)	
Linearity Error (End-to-end) and Relative Accuracy	Maximum ±0.175%	Maximum ±0.075%
Offset Error	Maximum range ±0.025%	
Recommended Fuse	0.032 A, series 217, fast-blow	Not applicable
Weight	62 g	61 g

Output Specifications

Items	F2-8AD4DA-1	F2-8AD4DA-2
Number of Channels	4	
Output Range	4 to 20 mA	0 to 5 V, 0 to 10 V
Resolution	16-bit, 305 µV/bit	15-bit (0 to 5 V) 16-bit (0 to 10 V) 152 µV/bit
Output Type	Source (Up to 20 mA)	Sink/source (Up to 10 mA)
Load Resistance	0 to 750 Ω	1 kΩ or more
Maximum Error	±0.25%	±0.15%
Full Scale Error	Maximum ±0.175%	Maximum ±0.075%
Maximum Offset Error	Maximum ±0.025%	
Accuracy Against Temperature	Maximum ±50 ppm/°C full-scale conversion (±0.005% range/°C)	
Maximum Crosstalk	-70 dB, 1 LSB (50/60 Hz)	
Linearity Error (End-to-end) and Relative Accuracy	Maximum ±1 count (±0.025% range)	
Output Persistence and Reproducibility	Minimum ±1 LSB (Warm-up for 10 minutes)	
Output Ripple	0.005% full-scale	
Output Set Time	Up to 0.5 ms, Minimum 5 µs (Full-scale conversion)	
Protection of Load Current	Protection by the output open circuit	Standard 15 mA output-current limitation
Type of Output Protection	Electric limited current / 20 mA or less	Fixed at 15 V DC peak (Clamped by transient voltage protection circuit)
Output signal at startup and stopping	4 mA	0 V

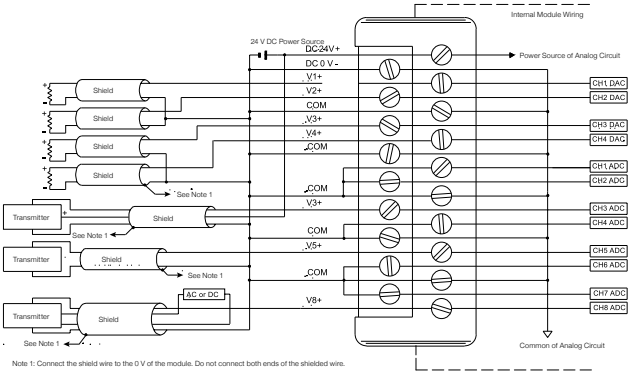
Wiring Diagram

1 Channel 4-20mA Output
2 Channel 4-20mA Output
3 Channel 4-20mA Output
4 Channel 4-20mA Output
3 Channel 3-wire 4-20 mA Input
5 Channel 2-wire 4-20 mA Input
8 Channel 4-wire 4-20 mA Input



Note 1: The recommended fuse is a series 217 0.032 A fast-blow fuse (4 to 20 mA/CH)
Note 2: Connect the shield wire to the 0 V of the module. Do not connect both ends of the shielded wire.

1 Channel Voltage Output
2 Channel Voltage Output
3 Channel Voltage Output
4 Channel Voltage Output
3 Channel 3-wire Voltage Input
5 Channel 2-wire Voltage Input
6 Channel 4-wire Voltage Input



Note 1: Connect the shield wire to the 0 V of the module. Do not connect both ends of the shielded wire.

DL205 Series

Analog Module

Temperature Input Module《4 Channels》

F2-04RTD

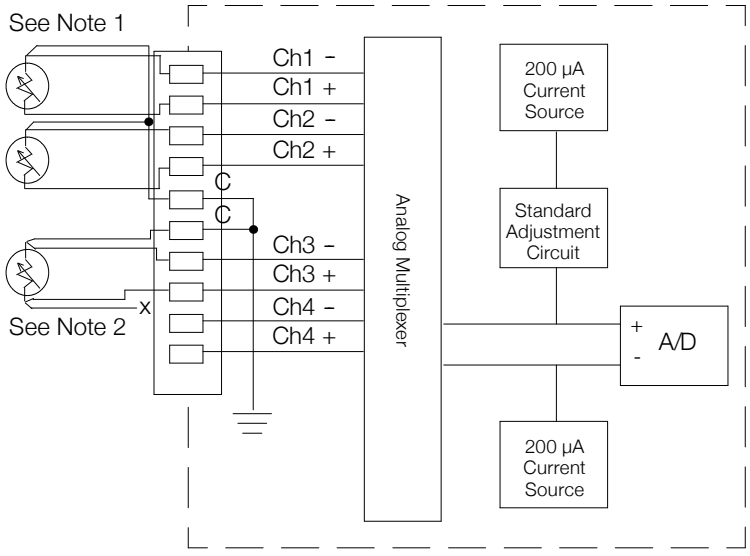
A cover is available.

Input Specifications

Items	Specifications
Number of Channels	4
Input Range	Pt100 Type: -200.0˚C to 850.0˚C (-328˚F to 1562˚F) Pt1000 Type: -200.0˚C to 595.0˚C (-328˚F to 1103˚F) jPt100 Type: -38.0˚C to 450.0˚C (-36˚F to 842˚F) CU-10/25 Type: -200.0˚C to 260.0˚C (-328˚F to 500˚F)
Resolution	16-bit
Display Resolution	±0.1˚C (±3276.7)
Resistance Thermometer Bulb-excited Current	200 µA
Input Type	Differentiation
Notch Filter	> 100 dB notch (50/60 Hz), -3 dB = 13.1 Hz
Maximum Settling Time	100 ms (Full-scale step input)

Items	Specifications
Common Mode Signal Range	0 to 5 V DC
Absolute Maximum Rating	Failure protection input = Maximum DC ±50 V
Sampling Rate	160 ms/channel
Converter Type	Charge Balancing
Linearity Error (End-to-end)	Maximum ±0.05˚C, standard ±0.01˚C
Maximum Error	±1˚C
Analog Data Update	Maximum 4 channels per scan (When the D2-240, D2-250-1, and D2-260 are used) Maximum 1 channel per scan (When the D2-230 is used)
Number of Occupied Inputs	Input 32 points (Binary data bit x 16, channel ID bid x 2, fault bit x 4)
Temperature Drift	No (Self-correction function)
Weight	86 g

Wiring Diagram



Note 1: The three cables that connect the resistance thermometer bulb to the module should be the same kind and have the same length. Do not use shielded wire or drain wire for the third connection.
Note 2: If the resistance thermometer bulb sensor is a four-wire system, do not connect the detection (+) wire as shown in the figure.

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DL205 Series
Analog Module

■Temperature Input Module《4 Channels》
F2-04THM

General Specifications

Items	Specifications
Number of Channels	4, differentiation
Common Mode Signal Range	DC ±5 V
Common Mode Rejection Ratio	Minimum 90 dB (DC), Minimum 150 dB (50/60 Hz)
Input Impedance	1 MΩ
Absolute Maximum Rating	Failure protection input = Maximum DC ±50 V
Accuracy Against Temperature	Maximum ±5 ppm/°C full-scale (The maximum erroneous offset is included.)
Analog Data Update	Maximum 4 channels per scan (When the D2-240, D2-250-1, and D2-260 are used) Maximum 1 channel per scan (When the D2-230 is used)
Digital Input Point Conditions	Input 32 points (I) (Binary data bit x 16, channel ID bid x 2, diagnosis bit x 4)

Thermocouple Specifications

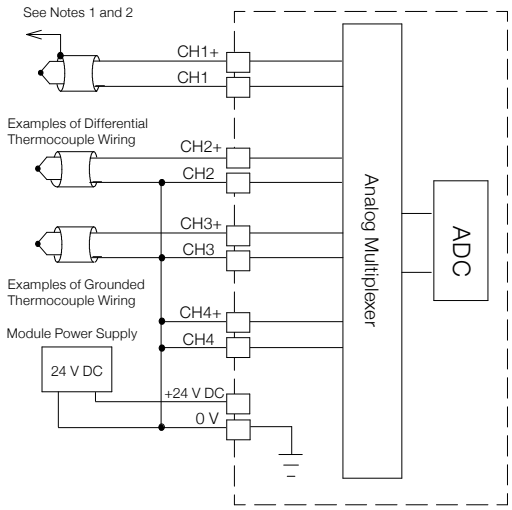
Items	Specifications
Input Range	J type: -190°C to 760°C (-310°F to 1400°F) E type: -210°C to 1000°C (-346°F to 1832°F) K type: -150°C to 1372°C (-238°F to 2502°F) R type: 65°C to 1768°C (149°F to 3214°F) S type: 65°C to 1768°C (149°F to 3214°F) T type: -230°C to 400°C (-382°F to 752°F) B type: 529°C to 1820°C (-984°F to 3308°F) N type: -70°C to 1300°C (-94°F to 2372°F) C type: 65°C to 2320°C (149°F to 4208°F)
Display Resolution	±0.1°C
Cold Junction Compensation	Automatic
Conversion Time	100 ms/channel
Warm-Up Time	30 minutes (Standard) ±1°C repeat accuracy
Linearity Error (End-to-end)	Maximum ±0.05°C, Standard±0.01°C
Maximum Error	±3°C (Do not include thermocouple error.)

Voltage Input Specification

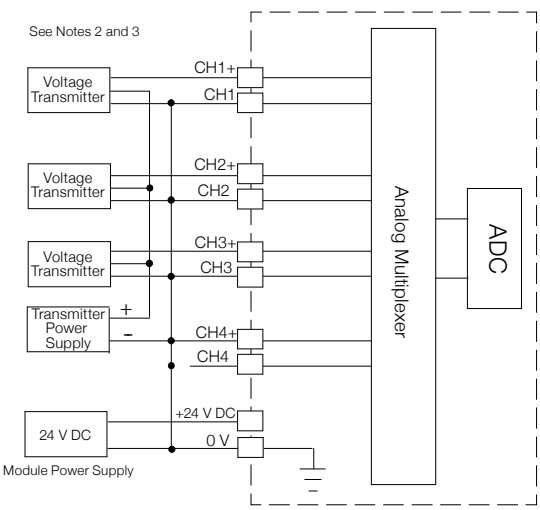
Items	Specifications
Voltage Range	0 to 5 V, ±5 V, 0 to 156.25 mV, DC ±156.25 mV
Resolution	16-bit
Full Scale Error	Standard ±13 count, Maximum ±33 count, the erroneous offset is not included.
Offset Error	Maximum ±1 count (0 V input)
Linearity Error (End-to-end)	Maximum ±1 count
Maximum Error	±0.02%: 25°C
Weight	86 g

Wiring Diagram

Thermocouple Input Wiring Diagram



Input Voltage Wiring Diagram



Note 1: Shield should be terminated on the respective signal source sides.
Note 2: Connect the unused channels to the common terminals (0 V, CH4 +, CH4).
Note 3: If you use the 0 to 156mV range or the 5 V range, connect the (-) or (0) bolt terminal to 0 V to make it within the allowable range of common-mode signals.

Common Subject Matter
KOSTAC Safety AZ-C1
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DL205
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DirectSOFT
Terminator I/O
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The specifications and prices described in this catalog were valid when the catalog was issued.
For the latest information, contact our sales persons or see our website.

DL205 Series

Base Unit

Base

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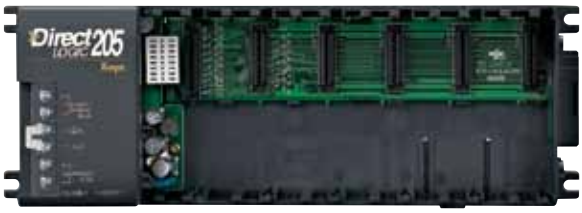
D2-06B-1 D2-06BDC1-1 D2-09B-1 D2-09BDC1-1



The photo shows the D2-06B-1.

Power supply specifications

Items	AC Power Supply Base Unit	24 V DC Power Supply Base Unit
Model Number	D2-03B-1 D2-04B-1 D2-06B-1 D2-09B-1	D2-03BDC1-1 D2-04BDC1-1 D2-06BDC1-1 D2-09BDC1-1
Withstand Voltage	1 minute (1500 V AC is applied between primary, secondary, and field grounds.)	
Insulation Resistance	> 10M (500 V DC)	
Input Voltage Range	85 to 132 V AC (100 V range), 170 to 264 V range (200 V range), 47 to 63 Hz	10.2 to 28.8 V DC (24 V DC range, ripple is below 10%.)
External 24 V DC Power Supply	Up to 300 mA	No
Maximum Inrush Current	30 A	10 A
Maximum Electric Power Consumption	80 VA	25 W

Environmental Specifications

Items	Rating
Storage Temperature	-20˚C to 70˚C
Use Ambient Temperature	0˚C to 55˚C
Use Ambient Humidity	30% to 95% relative humidity (No condensation)
Vibration Resistance	Compliant with MIL STD 810C, Method 514.2, JIS C0040, and sine wave oscillation test method
Impact Resistance	Compliant with MIL STD 810C, Method 516.2, JIS C 0041, and sine wave oscillation test method
Noise Resistance	NEMA (ICS3-304)
Surrounding Atmosphere in Place of Use	No corrosive gases

Outline

The base unit is designed to create the system of the DL205.
The base unit models come in 2-, 3-, 5- and 8-slot types, each of which has both an AC power source model and a DC power source model.
The base can be expanded depending on the CPU used.

Model Number List

Model Number	D2-03B-1	D2-03BDC1-1	D2-04B-1	D2-04BDC1-1	D2-06B-1	D2-06BDC1-1	D2-09B-1	D2-09BDC1-1
Number of Slots	2		3		5		8	
Supply Voltage	AC	DC	AC	DC	AC	DC	AC	DC
Installation	Attachment bore (4-M4) or DIN rail (EN5022 compliant)							
Weight (g)	350	322	381	354	410	392	530	522

DL205 Series

Precautions when Switching from an SZ

Precautions when Switching from the SZ Series to the D2 Series

With the addition of new models D2-250-1/D2-260, the D2 series is marketed as the higher end successor of the SZ series and as the world-common model. With the addition of a CPU, the D2 series supports base expansion that cannot be realized in the SZ series. Moreover, the lineup of analog modules and network modules is enhanced, and new modules such as simple positioning modules are available. Compared with the SZ series, the D2 series can meet customer demand for more abundant applications.

Q1. What are the precautions in mixing the SZ-D2 series?

A1. There are the following precautions.

[1] The case colors are different. SZ (gray), D2 (black)

[2] The model numbers are different. See the 5-105 SZ/DL205 model number correlation table.

[3] When a new module is attached to the SZ CPU, some CPUs cannot be used because the firmware is not supported. There are no problems when the D2 CPU is used.

Q2. How are programs created in the SZ series transferred to the D2 series, and what precautions are there on doing that?

A2. There are the following precautions.

[1] Program data
The program data can be used for both DirectSOFT and the S-62P without change.

[2] Sign bit in binary arithmetic
Note that the results of operations differ between signed bits and unsigned bits.
For details, see 5-53 in the DL205 User's Manual.

Q3. Are there changes and problems when using DirectSOFT?

A3. See the following 1 to 3.

[1] Regarding the link registered in DirectSOFT,
If the D2-230 is connected to the link of the SZ-3, it can be used as it is.
If the D2-240 is connected to the link of the SZ-4, it can be used as it is.
If the D2-250 and D2-250-1 are connected to the link of the SZ-4M, they can be used as it is.
If the D2-260 is connected to the link of the SZ-4M, an error is displayed, but it can still be used.

[2] The identification numbers of the D2 series are the same as the SZ series. (Not X, Y but I, Q)

[3] There is no difference in error messages.

* Regarding [2] and [3] above, the D2 series does not differ from the SZ series because the data is possessed not by the PLC but by DirectSOFT.

Q4. Are there change and problems when using the D4-HPP-1 and D2-HPP?

A4. See the following 1 to 3.

[1] The identification numbers of the D2 series are the same as the SZ series. (Not X, Y but I, Q)

[2] 41 menu (Display of the I/O configuration)
The names of models are written in English because they are displayed after being extracted from the PLC.

[3] 42 menu (I/O diagnosis)
When there are errors, error contents are shown in English. (See below.)
- E201 TERMINAL BLOCK OFF
- E206 I/O POWER LOW
- E252 I/O CONFIG Error
- E202 I/O MDL NOT PRESENT
- E252 CTIF in wrong SLOT

Q5. Can the modules newly added in the D2 series be used in the SZ series?

A5. The modules cannot be used in the SZ series because the firmware is not supported.

Q6. Are there precautions concerning the communication ports (such as communications with the GC series)?

A6. The functions are the same. No particular problems will occur.
As mentioned earlier, the recognition symbols are possessed not by the CPU but by tools or peripheral devices such as the HMI.
The same can be applied to VisualScope and HMIs made by other companies.

Q7. Are EX specification (overseas version) models still being sold?

A7. Since the D2 series is marketed not as an export model or domestic model but as a world-common model, the D2 series is also the successor model of the EX model.

Common Subject Matter
KOSTAC Safety AZ-C1
SJ
DL05/06
DL205
D4
D3
Programmer
DirectSOFT
Terminator I/O
Process Control
ZIP LINK
Features
Specifications
Dimensions
CPU Specifications
Special Module
Input/Output Module
Analog Module
Base Unit
Precautions when Switching from an SZ
SZ/DL205 Model Number Correlation Table

DL205 Series

SZ/DL205 Model Number Correlation Table

SZ/DL205 Model Number Correlation Table

Classification	SZ Model Number	DL205 Model Number	Name/Function
CPU Module		D2-265	Highly-functional type / base expandable
		D2-260	Highly-functional type / base expandable
	(SZ-4M)	D2-250-1	Highly-functional type / base expandable
	SZ-4	D2-240	Highly-functional type
	SZ-3	D2-230	General-purpose type
Base Extension Module	(Z-02B)	D2-03B-1	Base for 2 modules (AC power supply)
	(Z-03B)	D2-04B-1	Base for 3 modules (AC power supply)
	(Z-05B)	D2-06B-1	Base for 5 modules (AC power supply)
	(Z-08B)	D2-09B-1	Base for 8 modules (AC power supply)
	(Z-02B-C)	D2-03BDC1-1	Base for 2 modules (DC power supply)
	(Z-03B-C)	D2-04BDC1-1	Base for 3 modules (DC power supply)
	(Z-05B-C)	D2-06BDC1-1	Base for 5 modules (DC power supply)
	(Z-08B-C)	D2-09BDC1-1	Base for 8 modules (DC power supply)
Base Expansion Module		D2-EM	Base expansion module (Attached to basic base / expansion base)
		D2-CM	Expansion base controller (Inserted into the CPU slot on the expansion base side)
Input Module	Z-8ND1	D2-08ND3	8 points 12/24 V DC: Sink/source
	Z-16ND1	D2-16ND3-1	16 points 24 V DC: Sink/source (Connector type)
	Z-16ND2	D2-16ND3-2	16 points 24 V DC: Sink/source
	Z-32ND1	D2-32ND3	32 points 24 V DC: Sink/source (Connector type) (Connector sold separately)
		D2-32ND3-2	32 points 5/12 V DC: Sink/source (Connector type) (Connector sold separately)
		D2-64ND3	64 points 24 V DC: Sink/source (Connector type) (Connector sold separately)
	Z-8NA1	D2-08NA-1	8 points 100 V AC
		D2-08NA-2	8 points 200 V AC
	Z-16NA1	D2-16NA	16 points 100 V AC
Output Module	Z-4TD1	D2-04TD1	4 points Open collector output: 12/24 V DC sink
	Z-8TD1	D2-08TD1	8 points Open collector output: 12/24 V DC sink
		D2-08TD2	8 points Open collector output: 12/24 V DC source
	Z-16TD1	D2-16TD1-1	16 points Open collector output: 12/24 V DC sink (Connector type)
	Z-16TD2	D2-16TD1-2	16 points Open collector output: 12/24 V DC sink
	Z-16TD3	D2-16TD2-2	16 points Open collector output: 12/24 V DC source
	Z-32TD1	D2-32TD1	32 points Open collector output: 12/24 V DC sink (Connector type) (Connector sold separately)
		D2-32TD2	32 points Open collector output: 12/24 V DC source (Connector type) (Connector sold separately)
		D2-64TD1	64 points Open collector output: 12/24 V DC sink (Connector type) (Connector sold separately)
	Z-8TA1	D2-08TA	8 points AC output (SSR): 100/200 V AC
		F2-08TA	8 points AC output (SSR): 100 V AC
	Z-12TA1	D2-12TA	12 points ACoutput (SSR):100 V AC
	Z-4TR1	D2-04TRS	4 points relay contact output (Independent common)
	Z-8TR1	D2-08TR	8 points relay contact output (Common)
		F2-08TR	8 points relay contact output (2 Common)
		F2-08TRS	8 points relay contact output (Independent common)
	Z-12TR1	D2-12TR	12 points relay contact output (2 Common)
Input/Output Module	Z-8CDR1	D2-08CDR	4 points 24 V DC: Sink/source input: 4 points relay contact output
Analog Module	Z-4AD1	F2-04AD-1	12-bit 4ch input (Current 4 to 20 mA) P/S: 24 V DC
	Z-4AD2	F2-04AD-2	12-bit 4ch input (Voltage 0 to 5 V, 0 to 10 V DC, ± 5 V, ± 10 V)P/S: 24 V DC
		F2-08AD-1	12-bit 8ch input (Current 4 to 20 mA)
		F2-08AD-2	12-bit 8ch input (Voltage 0 to 5 V, 0 to 10 V DC, ± 5 V, ± 10 V)
	Z-2DA1	F2-02DA-1	12-bit 2ch output (Current 4 to 20 mA) P/S: 24 V DC
		F2-02DA-1L	12-bit 2ch output (Current 4 to 20 mA) P/S: 12 V DC
		F2-02DAS-1	16-bit 2ch output (Current 4 to 20 mA) Independent common
	Z-2DA2	F2-02DA-2	12-bit 2ch output (Voltage 0 to 5 V, 0 to 10 V DC, ± 5 V, ± 10 V) P/S: 24 V DC
		F2-02DA-2L	12-bit 2ch output (Voltage 0 to 5 V, 0 to 10 V DC, ± 5 V, ± 10 V) P/S: 12 V DC
		F2-02DAS-2	16-bit 2ch output (Voltage 0 to 5 V, 0 to 10 V DC, ± 5 V, ± 10 V) Independent common
		F2-08DA-1	12-bit 8ch output (Current 4 to 20 mA)
		F2-08DA-2	12-bit 8ch output (Voltage 0 to 5 V, 0 to 10 V DC)
		F2-4AD2DA	12-bit 4ch input/12-bit 2ch output (Current 4 to 20 mA)
		F2-8AD4DA-1	16-bit 8ch input/16-bit 4ch output (Current 4 to 20 mA) (Unusable for D2-230, 240)
		F2-8AD4DA-2	16-bit 8ch input/16-bit 4ch output (Voltage 0 to 5 V, 0 to 10 V DC) (Unusable for D2-230, 240)
		F2-04RTD	4 ch resistance thermometer bulb input
		F2-04THM	4 ch thermocouple input

DL205 Series

SZ/DL205 Model Number Correlation Table

Classification	SZ Model Number	DL205 Model Number	Name/Function
Network Module	H2-ECOM	H2-ECOM100	Ethernet module (10/100Base-T/TX)
	Z-01DM	D2-DCM	Host link module
Remote I/O Module		D2-HSIO	CUnet module
		H2-ERM100	Remote I/O master station (Ethernet version)
Special Module		F2-08SIM	Simulator module (Toggle switch 8 points)
		D2-MLINK	MECHATROLINK-II motion control module
		D2-02PM	2-axis positioning
		H2-CTRIO	High speed counter input/output
		H2-CTRIO2	High speed counter input/output
	Z-CTIF	D2-CTRINT	High speed counter interface
Network Slave (No CPU) * The ladder software cannot be embedded.		H2-EBC100	Ethernet Base Controller (10/100Base-T/TX) (Inserted into the CPU slot)
		F2-DEVNETS-1	DeviceNet Slave (Inserted into the CPU slot)
Peripheral Device	S-01P2	D4-HPP-1	Instruction word programmer
	S-20P	D2-HPP	Instruction word programmer
	DirectSOFT	DirectSOFT	Ladder tool software
	S-10D	DV-1000	Operation display panel
Other	Z-DMY	D2-FILL	Dummy panel
	RB-9	D2-BAT	Battery for D2-240 (SZ-4): for CPU memory backup
	Z-ROM1	D2-EE-1	EEPROM for D2-230 (SZ-3): 8 K byte (2 units)
	Z-ROM2	D2-EE-2	EEPROM for D2-240 (SZ-4): 32 K byte (2 units)
	Z-3FK	D2-FUSE-1 (Z-3FK)	Fuse kit for replacement: 3.15 A 5 units for D2-12TA (Z-12TA1)
	Z-4FK	D2-FUSE-4 (Z-4FK)	Fuse kit for replacement: 4 A 5 units for D2-12TR (Z-12TR1)
	Z-6FK	D2-FUSE-3 (Z-6FK)	Fuse kit for replacement: 6.3 A 5 units for D2-04TRS (Z-4TR1) and D2-08TR (Z-08TR1)

* Codes in parenthesis represent similar model numbers.

The specifications and prices described in this catalog were valid when the catalog was issued.
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